Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL AND OTHER IMPROVEMENTS.

VOLUME VII.] NEW-YORK, AUGUST 14, 1852. [NUMBER 48.

THE
Scientific American,
CIRCULATION 16,000.
PUBLISHED WEEKLY
At 128 Fulton street, N. Y., (Sun Buildings),
BY MUNN & COMPANY.

Hotchkiss & Co., Boston.
Dexter & Bro., New York City.
Stokes & Bro., Philadelphia.
Cooke & LeCount, San Francisco, Cal.
G. S. Courtenay, Charleston, S. C.
John Carruthers, Savannah, Ga.
M. Boullemet, Mobile, Ala.
Sidney Smith, St. Louis, Mo.
M. M. Gardissal & Co., Paris.

Responsible Agents may also be found in all the principal cities and towns in the United States.

Terms—$2 a-year—$1 in advance and the remainder in 6 months.

RAIL-ROAD NEWS.

Railroad Accidents.

The Committee appointed by the Legislature to inquire into the causes of Railroad Accidents, consisting of Senator Bartlett and Mr. McAlpine, State Engineer, with Senators Smith and Monroe, recently made a tour of examination over the Erie Railroad. They were accompanied by Hon. J. C. Wright, Controller; Col. Sclatter, Superintendent of the Ogdensburgh Railroad; Mr. Doxtater, Superintendent of the Watertown Railroad; Mr. Whistler, Superintendent of the New Haven Railroad; Major Morrell, Civil Engineer; several officers of the Erie Road; Mr. Minot, Superintendent; Mr. Post, Chief Engineer; Mr. Marsh, Secretary, and Mr. Warren, Auditor, were also of the party.

In the majority of cases, the causes of railroad accidents require no depth of learning or logic to point out; they are plain, palpable and transparent to the most illiterate mind. We seldom hear of an accident which requires some fine subtle theory to explain The cause of an accident, by the falling of a bridge, may lead to the discovery of a defective system in bridge building; and we cannot forget that one iron bridge failed on the New York and Erie Railroad, but the cause, so far, as we have been informed, has not been made public as a matter for scientific discussion; it led, however, to the condemnation of such structures on the said road. The committee appointed by the Legislature, and the gentlemen who accompanied them, are distinguished for professional skill and great attainments, and we confidently hope that their report will be the means of directing the attention of our next State Legislature to adopt efficient measures for the prevention of railroad accidents.

A New Locomotive.

A new locomotive has been built at Trenton, N. J., for the Trenton and Amboy Railroad, which heats the water before it enters the boiler. The tank is connected by a hose to the ash pan, which is made with a double bottom, to form a space of three inches, between the sheets, so as to contain water. From this space the water passes through an intermediate pipe, thence to the smoke box, where it passes out to the pumps, which are vertical, and fixed on the outside of the smoke box, and worked from the arm of the pendulum shaft.

Castor Oil for Railroads.

The Illinois Railroad, from Naples to Jacksonville and Springfield, use castor oil entirely on their car wheels. Considering the present high price of sperm oil, and the glutinous nature of whale and other inferior oils, this article (about 80 or 90 cents per gallon,) is well worth trying on the railroads in that region.

We hope that the accident to the Henry Clay will make our Congress act promptly on the Bill of Senator Davis for the prevention of steamboat accidents.

PATENT MEAT CUTTER.---Fig. 1.

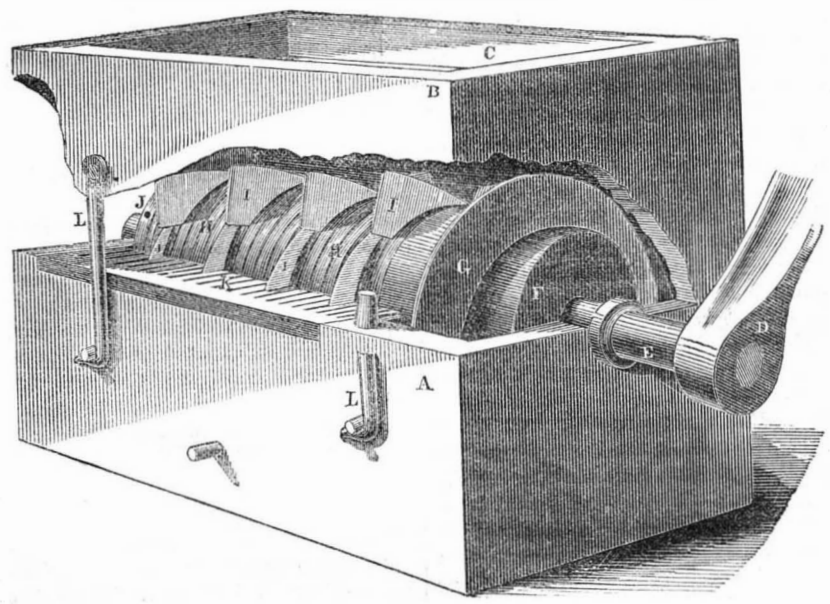
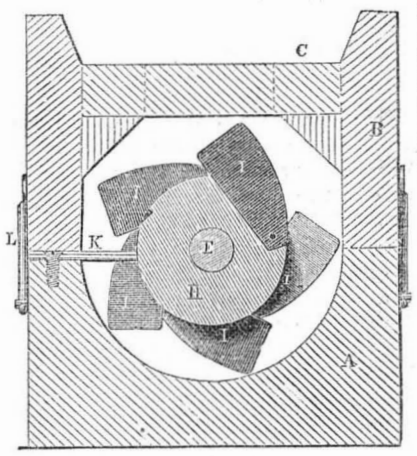


Figure 1 is a perspective view, and figure 2 is a transverse section of a machine for cutting meat for sausages, invented by Thomas Vanderslice, of Valley Forge, Chester Co., Pa., and for which a patent was granted on the 6th of May, 1851.

The principal feature of this invention consists in an arrangement for adjusting the positions of the several rotary cutters, so as to keep their edges in contact with the periphery of the cylindrical chamber within which they revolve. The casing of the machine consists of an oblong cubical trunk, A B. C is the top of this box. D is a crank handle on the end of the mandrel, E. This mandrel passes through the entire length of the box, and is supported on bearings at each end. On the near end of this mandrel there is a short boss, F, on the periphery of which there is a helical flange, or part of a screw, G, it extends to the entrance of a cylindrical chamber; the left side of the flange is at right angles with the axle, and the right side has an inclined curve from the apex of the flange to the periphery of the cylinder. Upon the mandril there is a series of circular blocks, also a series of cutters, I I, which are adjusted on the mandril between the blocks—a knife and adjusting plate, H, are placed between a pair of blocks; the adjusting plate and cutter are of equal thickness. Each cutter is mounted on a pivot pin; in the periphery of each adjusting plate, H, there is a notch, by means of which the relative position of the plate is occasionally changed, and the position of the cutter (the back of which rests upon a corner of the adjusting plate) is thereby also adjusted. A screw thread is cut upon the mandril, near the left end of it, upon which is a circular screw nut, J, by which the entire series of circular blocks, knives, and adjusting plates are firmly pressed together, and by which they are held in whatever relative position they may be placed. The use of the plates, H, is to adjust the cutters in such positions that the most prominent part of the cutting edge of each may work in close contact with the periphery of the cylindrical chamber in which the knives revolve. K is a horizontal plate secured across on the lower section of the box. It has a series of slots in it of sufficient length and breadth to allow the cutters, I I to pass through them as it revolves, and whereby the cutters are cleared from the meat. The positions of these cutters are so arranged as to succeed each other in helical order, as represented in both figures. The top part, C, is partly a cavity, with a bottom to hold the meat that may be placed upon it, and there is a small opening, as shown by the dotted lines in fig. 2, above the screw, G. The meat or other substances to be minced, passes down this opening upon the screw, which forces the same into the chamber in which the knives revolve between the slots, and is acted upon by the whole knives in succession, they being spirally set, and the flange, G, acting along with them to force the meat out at the left end of the box. It is there delivered through an opening not seen, in a finely subdivided state. The box, A, is made in two parts, with a hinge, and the hook rods, L L, are for the purpose of keeping the two parts close and firmly united together when the machine is in operation.

FIG. 2.



The claim is for the mode of adjusting the cutters by means of the adjusting plates. This meat cutter is a very simple one, and it is not liable to get out of order. All the parts can be made strong, so as to endure for a long time. It is worthy of the attention of those engaged in the business of mincing meats, vegetables, &c., and for private families it is also a commendable machine; it will save a great deal of long and arduous labor to those families who use no other machine than a common mincing knife.

More information about the sale of rights, &c., may be obtained by letter addressed to Mr. Vanderslice, at his residence in Pennsylvania.

New Marble Quarry.

The Poughkeepsie Eagle chronicles the discovery of a marble quarry in the neighborhood of that town. The marble is of four qualities; the first black, with an Egyptian yellow and white vein; the second dark blue, with light blue veins and clouds; the third pink, and the fourth black without veins constituting the principal part. Although none of it has been properly wrought, it has been found to take as handsome a polish and be susceptible of as fine a finish as the best Italian marble.

To Prepare Amber Varnish, &c.

By means of this process, the amber, which melts only at a high temperature, is placed in a strong copper vessel, closed at its upper part, and luted with clay. At its lower part, in front, is a conical pipe, before which is placed a strainer, formed of a piece of iron, pierced full of holes, by means of which the amber, when melted, may be separated from the impurities which it contains. The copper vessel rests on a furnace, its conical end being plunged some inches into it. When the temperature is sufficiently high, the melted amber flows, deprived of its impurities, into a large copper vessel or recipient placed underneath, and about two-thirds filled with the oil to be used in making the varnish. The incorporation of the melted amber with the oil is facilitated by heat. When the mixture is complete, the other necessary ingredients are to be added. This process has been found by M. Stilling, after considerable experience with it, to possess the following advantages:—1.—The amber is completely fused, without residue, and as it is contained in a closed vessel, nothing can be lost by evaporation. 2. There is no danger of fire. 3. The thick copper vessels do not, like the earthen vessels sometimes used, break and waste the contents.

To Give a Blue Color to German Silver or Argentine.

Place a plate of the metal, 3 or 4 inches square (previously thoroughly polished, so as to give it a brilliant appearance,) in a vessel containing earth, and place it in communication with a somewhat strong zinc wire, then pour into the vase a slightly concentrated solution of prussiate of potash and protochloride of iron dissolved in water. The metallic plate must be completely immersed. At the expiration of a few seconds, the argentine, which is electro-negative, will be covered with a beautiful blue color, which, though it does not stand much rubbing, is yet sufficiently adherent to render the application of the process useful.

To Make Sealing Wax.

Venice turpentine, 112 parts; shellac, 196 parts. Melt with moderate heat in an earthen pipkin and add cinnabar, 70 parts; afterwards a paste, composed of cinnabar, 70 parts; carbonate of magnesia, 3 parts; oil of turpentine, q. s. to make a paste. Stir the whole well together, until all air bubbles have disappeared, then run into moulds of tinned iron, the interior of which have previously been rubbed over with oil of almonds. When cool, polish the sticks of sealing wax, by passing them rapidly through the flame of a spirit lamp.

Fine Red.

Venice turpentine, 112 parts; shellac, 196 parts; cinnabar, 112 parts; carbonate of magnesia, and oil of turpentine, 3 parts.

Fine Black.

Venice turpentine, 126 parts; shellac, 252 parts; colophaney, 14 parts; lamp black, mixed with oil of turpentine.

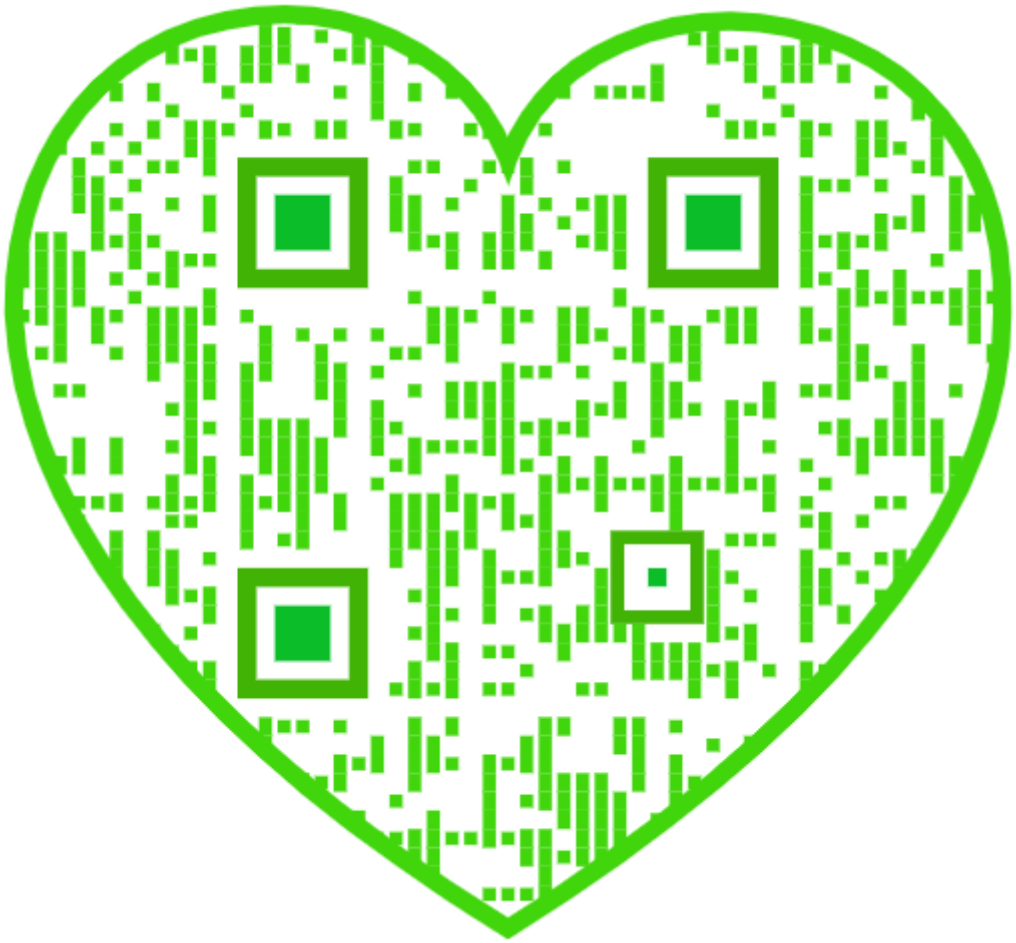
Yellow.

Venice turpentine, 56 parts, shellac 112 parts; colophaney, 35 parts; King's yellow oxchloride of lead, 21 parts; magnesia, 3 parts; turpentine.

Bark Bound Trees.

Scrape with a knife and wash with very strong soap suds, once or twice during a season, and the cure will in all probability be effected; if not, tie long straw around the trunk of the tree, which is said to be an effectual cure.

© 1852 SCIENTIFIC AMERICAN, INC



MISCELLANEOUS.

A Great Saw Mill---Lumber in Canada.

The "Montreal Herald" gives an account of the lumbering on the Ottawa River, which is said to contain more water than all the rivers in Britain put together. It states that the Messrs. Gilmour have a large saw mill on the Gatineau Falls—a river that falls into the Ottawa; at this point the river is divided into branches by a steep rocky island; the eastern and largest branch being probably some seven hundred and fifty yards wide, with a fall of thirty or forty feet.

The water-power is obtained from the eastern channel, and the whole breadth between the island and the main land is covered with the mill buildings and the necessary weirs, dams, flood-gates, and bridges. These, however, are by no means the most remarkable part of the works. Down to a point which may probably be a third of a mile above the island, the whole of the logs cut upon the river come down together; the only attention paid them being what is required to keep them from driving on shore. But there all the logs intended for the mills must be separated from the rest. Booms are therefore thrown across the river, by which the whole are stopped, and then the logs marked G are sent forward to the mill by a channel, formed partly by chained logs, and partly by a very broad stone wall, faced in one portion of its length by woodwork, placed in a slanting direction to ward off ice. The laying of the foundation of this wall, placed, as it is, within the boiling water of the cataract, must have been at an immense expense of labor and money.

The mill is a large handsome wooden building containing four gangs of saws, each capable of cutting the largest log into standard planks, and each furnished with butting saws and circular saws for sidings. These saws go day and night; the light for work after dark being supplied by gas made on the premises, in great part by the combustion of the refuse from the mill. Some idea may be formed of the extent of this machinery from the fact that 60,000 and 70,000 logs are got out to be sawn this season, which will make on an average each night eight Quebec standard boards approaching to 500,000 deals during the year. After being sawn each deal is passed into a slide—a kind of wooden trough through which the water runs—and allowed to travel on toward the smooth water below the foot of the rapid. There are a great many of these small slides communicating with all parts of the building, but they all unite in one common slide, and boards are conveyed upon it for a distance of a mile in length.—There are one hundred men constantly employed in the mill.

There is also a farm attached to the concern; for the cost of bringing hay and similar provisions from a distance through the woods, would be too onerous a charge. There are two other farms also, one of eight hundred acres near the shanties in the forests where logs are cut.

The present season is one of great hope for parties engaged in the lumber trade, prices being looked upon as amply remunerative. The men employed share in this good fortune. Wages on the Ottawa for men employed in the trade are now $20 per month besides food, and in the shanties, of course lodging. It is pleasing to add that a very great improvement has lately taken place in their deportment.

General temperance is, of course, the cause of this change; and the improvement is shared in by the employers as well as by the employed.

Arrived at Quebec, the boards have to be sorted, or as it is there termed, culled into three different qualities, which is done by officers sworn under Provincial authority.—They are there of course shipped for England, the square timber and deal trade of Canada being sufficient to load annually 1,200 ships, averaging 300 tons.

Singular Doings on the Lakes.

The Chicago Journal, of the 27th July, says that the river "that morning was as high as at any time the present season." There is something truly remarkable in these "ups and downs" of river and lake. The small lakes also, in Michigan and Indiana, rise and fall in a similar manner, which suggests the idea that all these beautiful sheets of water have subterranean communication with Lake Michigan. "Clear Lake," near which the village of La Porte is situated has risen within a few weeks past to such a height that it has submerged the plank road between Michigan City and La Porte, which would have been deemed hardly possible by those who knew the relative position of each.

Reported Discovery of Anthracite Coal in California.

The New Orleans Picayune, of the 26th ult., has the following information:

Through a friend, who recently arrived in this city, direct from the Pacific coast of Central America, we hear the interesting intelligence that a mine of superior anthracite coal has recently been discovered in the State of San Salvador, on the southern bank of the river Lempa, which empties itself into the Pacific, north of the Gulf of Fonesca, and only a few miles from Realeje. The coal has been tested and contains eighty per cent. of carbon, burning like the mountain and white ash coal of Pennsylvania. The mine is situated within three hundred yards of the river bank, and crops at different points within a space of two and a half leagues. The vein runs northeast and southwest. The indications of the strata are considered by the discoverers as justifying the belief that it is extremely rich if not inexhaustable. If it answers the descriptions given to us, and we have no reason to doubt their accuracy, it is a remarkable and fortunate discovery, and must prove of incalculable importance to steam navigation on the Pacific. Many that use coal now, use that brought across the ocean, or from the Atlantic side, at a cost of $60 a ton. A deposit, at so convenient a place, in such quantities, must be more precious to the owners, and as beneficial to the world as a gold mine.

More Gas.

As is very generally known, says the Fredonia Censor, that our village has for a long time been lighted by natural gas, which issues at certain places spontaneously from fissures in the underlaying strata of rock. The supply, however, has hitherto been insufficient for the demand. On Thursday afternoon last, while a workman was engaged in drilling for a further supply of water in the well at the Johnson House, a fissure was reached, from which, on the withdrawal of the drill, a large and constant current of gas issued, with much force, through the water. Upon placing a tunnel over the jet and applying a candle, the gas ignited, throwing a column of flame to the top of the well, near twenty feet and burning the man severely. Up to the present time, the gas continues to issue unfailingly, and it is the intention of the proprietors of the hotel to apply it to immediate use in lighting their building.

Convention of Tobacco Manufacturers.

The tobacco manufacturers of Lynchburg, Va., have called a convention of all the manufacturers of the article in that State, and of all the agents throughout the United States, to assemble at Richmond on some day not yet designated, to consider the propriety of suspending operations during the winter months—that is, that no tobacco shall be put up for market during the months of January, February, and March. It is contended that under the system now pursued the tobacco put up during those months is forced on the Northern markets in April and May, and must either be sold at a sacrifice, or held over until the fall, when it becomes mouldy, and unfit for chewing purposes.

New Feature in the Business of Boston.

Sixteen cars, loaded with eight sticks of timber, for ship's masts, 84 feet in length, and 3 feet in diameter, loaded in Buffalo, were lately brought over the Buffalo and Rochester Railroad, Rochester and Syracuse, Syracuse and Utica, Utica and Schenectady, Rensselaer and Saratoga, Saratoga and Washington, Rutland and Washington, Rutland and Burlington, Cheshire, Fitchburg, Grand Junction, to East Boston, and thence over the Eastern Railroad to Portsmouth, N. H., 628 miles, without change of cars. Four car loads of slates were also brought at the same time over the Rutland, Cheshire, and Fitchburg Railroads, to the Grand Junction depot, at East Boston, from the slate quarry recently opened in Fairhaven, Vt.

To Plaster Wheat in the Fall.

Wheat, when plastered in the fall, obtains more root, and is thus enabled to stand the frosts better; it has the assistance of the plaster at a season of the year when it is almost impossible to go over the fields, and when it is most needed—namely, the very early spring; it gets its growth and ripens in good time; whereas, when applied in the spring, the wheat continues to grow late, sometimes to the injury of the crop—a superabundance of straw, falling down, rust, &c., &c., oftentimes being the consequence.

Scythes.

Workmen often make a complaint of their scythes not acting well, of the edge not cutting uniformly, and the form being wrong, &c.; now the form best suited to each mower may be tested by a very simple experiment. Let a man with a piece of chalk in his hand, walk up to a high wall, or a barn door, and raising it as high as he can, strike a curve from right to left; the line so traced is the exact form that his scythe should be; and if he applies the edge of it, and finds it to correspond, it will cut uniformly from point to heel, and save himself much trouble and labor.

The English Language.

Our language is now spoken by seventy-five millions of people, and it is exceedingly copious,—Webster's Dictionary, the standard work, contains more than 70,000 words. In our daily life business, we use only about one sixth part of them. There are only about 10,000 in daily use by those who write and speak our language. The Chinese language contains only about 330 words, but by modifying the sounds, a dozen different ideas are expressed by the same character. To appreciate the flexible character of the English language, we have but to read the works of Washington Irving and Carlyle: the language of the two appears to be entirely different.

Spider's Thread.

Austrian papers state that a merchant of Vienna has lately presented to the Industrial Union of that capital the details of a series of experiments made by him to manufacture spider's thread into woven tissues. The thread is wound on a reel, and two dozen spiders produce in six minutes a beautiful and delicate thread, two thousand feet in length. The stuffs manufactured from it are spoken of as being far superior in beauty and delicacy of fabric to those of silk.

Zamanma.

The editor of the Charleston Courier has seen a sample of what the Indians of the Amazon call "zamanma." It is the production of a tree growing wild in that valley, and used by its inhabitants for its fine texture. It somewhat resembles in appearance and fineness our costly Sea Island cottons, but with much less strength of staple. The above sample was sent to Charleston by Lieut. Maury, U. S. Navy, who is now devoting himself to the development of the immense resources of that fertile region, with the earnest hope of making them subservient to the mercantile purposes of this country.

The Rice Crop.

The Winyaw (S. C.,) Observer says:—"The rice crop looks remarkably well, and promises to yield in accordance with its present appearance. We are informed that the growth on the Santee is luxuriant, and on some plantations the rice is shooting. We have also heard of the appearance of the caterpillar or Sampit, but are happy to learn they were discovered in time to destroy them by a large flow of water. The fall of water has been too large to benefit the corn crop, yet we hear flattering accounts of a bountiful harvest. The health of our town continues good.

The Honey Bee in California.

Mr. W. A. Buckley, of Newburgh, N. Y., has succeeded in introducing the honey bee in California. Out of three hives taken from New York, he succeeded in crossing the Isthmus with one, which arrived at San Francisco recently in a healthy and working order.—Great difficulty has been experienced in importing bees to the Pacific, in consequence of the wax melting in the tropics. Numerous experiments have failed on this account.

Reaping Machines in England---American Models.

The "Royal Agricultural Society" of England recently held its annual exhibition at Lewes, when no less than thirteen reaping machines were exhibited. The late display of the American reapers at the World's Fair has given an unusual impetus to the improvement of English reapers. It is said the English reaping machines are for the most part mere reproductions of the American ones, Hussey's being apparently the favorite, as it has a great many more imitators than McCormick's. The machine which obtained the Society's silver medal is one on Hussey's model, improved by Garrett. The edges of Hussey's cutters are bevelled on both sides; Garrett's improvement consists in bevelling the cutter on one side only, which, cutting against a keen edge guard of steel, similar to a pair of shears, cuts crops of any kind with precision and facility. Mr. Samuelson, of Backing, has made some improvements on McCormick's reaping machine. Instead of a cutter in the shape of a straight saw, working from side to side, the saw is cut into projecting points in zag-zag fashion, while the fingers that seized the corn have been made longer and pointed, and the flappers, by which the corn is thrown into the machine, can be made longer or shorter, as the height of the corn requires. Mr. Croshill has improved Hussey's machine in the form of the knives and their action.

Alcohol and Camphene Explosions.

On the 16th ult., Dr. Maguire, a dentist of Galveston, Texas, when filling a spirit lamp with alcohol, while it was burning dimly, the tin can, containing about half a gallon, exploded, and spread all over the room, covering his young child, and burning it so severely that it died the same night. Dr. Maguire was also very sevely burned himself.

On the 4th inst., a camphene lamp exploded in a store in Fayette street, Baltimore, burning three females so severely, that the youngest, a Miss Agnes Ficke, died next day.

Two weeks ago we noticed a terrible accident that occurred in Albany, N. Y., by the explosion of a cask of alcohol, in A. McClure's drug store, whereby a Mr. Bamber was so severely burned that he died next morning, and the whole building was burned down. There is no country in the world to compare with our's for accidents; the cause of those explosions was the mixture of atmospheric air in some manner, with the vapor of the alcohol, and the camphene. Alcohol is not explosive of itself, neither is camphene, but when the vapor of either of these fluids is mixed with a certain quantity of atmospheric air, it becomes an explosive compound, which, by a spark or flame, will explode in an instant with a force like gunpowder. Persons who employ alcohol, or who sell it, should be exceedingly careful to keep the vessels containing this fluid perfectly air-tight. The great explosions which take place in some of the coal mines in England are caused by carburetted hydrogen gas being mixed with air, and then ignited by the flame of some miner's lamp; the cause is the same. It is to be regretted that so many are ignorant of this; they do not read scientific works.

Plantain Leaves.

A correspondent of the New England Farmer states that plantain leaves, if pounded in a mortar, and the juice squeezed out through cloth, will, if mixed with cold water in mild doses, taken on an empty stomach, destroy, the effects of poison ivy, even if its marks cover the whole body.

Platina was first discovered in the gold mines of Choco; the Spaniards called it "juan blanca" (white gold), and "platino del Pinto" (little silver of Pinto). It is first mentioned by Scaliger in 1601, but did not become known in Europe till after Ulloa's voyage.

© 1852 SCIENTIFIC AMERICAN, INC

The Craters of the Moon.

Not less than three-fifths of the surface of our satellite are studded with vast caverns or rather circular pits, penetrating into its mass, and usually engirt at the top with a high wall of rock, which is sometimes serrated and crowned by peaks. These craters vary in diameter from fifty or sixty miles to the smallest place visible—probably 500 feet; and the numbers increase as the diameter diminishes, so that the multitude of the smaller ones becomes so great that we cannot reckon it. The ridge which environs the crater is always sloping on its external side, and steep or rather precipitous within, although it seldom descends to the cavern's base, by a single cliff or leap. Within it, there are generally concentric ridges, assuming the form of terraces, and making the descent to the bottom of the central chasm appear more gradual. The bottom of the crater is sometimes convex, low ridges of mountains being also found running through it, while at its centre conical peaks frequently rise, and smaller craters, whose height, however, seldom reaches the base of the exterior wall. These curious objects are so crowded in some parts of the Moon, that they seem to have pressed on each other, and disturbed, and even broken down each other's edges, so that through their mutual interference, the most odd-shaped caverns have arisen.

The crater Tycho is that brilliant spot near the top of the Moon, which, when the Moon is full, appears the centre of a system of shining streams or rays. The country around it is peculiarly distributed; there is no plain there larger than a common field. Now, if passing across that rugged district, one were gradually approaching Tycho, its first and distant aspect would seem like an immense well or ridge of rock in the horizon, with a stretch of nearly fifty miles, and reflecting the Sun's rays with a peculiar lustre. On approaching the ridge its character would change; we should then discern that it is part of an immense circle, but perhaps neither so lofty nor so steep, that a practiced mountaineer of the earth need shrink from its ascent. Suppose the ascent accomplished, and that with terrestial ideas one stood on the summit. Trusting to the analogy of every disturbed region of our own planet, we must have thought of the opposite side, while it was unseen only as a a corresponding slope, or at least as a descent, which, if differing in steepness, would correspond in extent; but the eye is now in presence of an appalling contrast! On the edge of a dizzy cliff, passing down by one unbroken leap for 13,000 feet, the traveller gazes below him in terror and bewilderment. At the base of the cliff several low parallel terraces creep along; but a little onwards the depth of the chasm is revealed, and it descends from the top of the ridge no less than 17,000 feet, or 2,000 feet more than the summit of Mount Blanc rises above the level of the sea! It is quickly perceived, too, that this huge barrier encloses a vast circular area fifty-five miles in diameter; so that, if the spectator were at the chasm's centre, he would find around him on every side, at the distance of twenty-seven miles, a gigantic and unbroken wall—unbroken by gap, or ravine, or pass of any description—rising into the air 17,000 feet, and forbidding his return to the external world!

How frightful that seclusion in the Moon, a chasm utterly impassable, its walls bare, rugged, hopeless as a prison's bars! It is a solitude, too, which nothing alleviates; verdure is never there, nor the song of a bird; rain never refreshes, nor cloud shelters it; it is relieved from a scorching sun and flaming sky only by night with its stars. Nor among those countless pits is Tycho the most appalling. There are some of nearly equal depth, whose diameter may not exceed 3,000 feet, nay, towards the polar regions of the Moon, caverns probably exist, whose depths have never yet been illumined by one beam of the solar light.—[Nichol.

Razors.

Barbers often tell us that razors get tired of shaving, but if laid by for twenty days they will then shave well. By microscopic examination it is found that the tired razor, from long stropping by the same hand and in the same directions, has the ultimate particles or fibres of its surface or edge all arranged in one direction, like the edge of a piece of cut velvet; but after a month's rest, these fibres re-arrange themselves heterogenously, crossing each other and presenting a saw-like edge each fibre supporting its fellow, and hence cutting the beard, instead of being forced down flat without cutting, as when laid by. These and many other instances are offered to prove that the ultimate particles of matter are always in motion, and they say that in the process of welding, the absolute momentum of the hammer causes an entanglement of orbits of motion and hence a re-arrangement, as in one piece; indeed, in the cold state, a leaf of gold laid on a polished surface of steel, and stricken smartly with a hammer, will have its particles forced into the steel so as to permanently gild it at the point of contact.

Recent Foreign Inventions.

Metals and Alloys.—The following is a condensed description of some improvements made in the treatment of some metals, and secured by patent in London by John D. Morries Stirling, of Black Grange, Scotland. The description is selected from the London Mechanics' Magazine:—

An improvement consists in combining with hardened lead a covering of tin, or alloy of tin, so as to produce a metal suitable for use as a substitute for Queen's metal, Britannia metal, British silver, or pewter. For this purpose the patentee takes a slab of hardened lead, which he rolls to any required thickness and quite smooth; he then places a sheet of tin or alloy thereof on the surface of the lead, and passes them through the rolls, using at first a pressure just sufficient to bring them into close contact, and applying what is technically called "a severe pinch," so as to complete the union of the metals. The compound sheet may then be rolled to any required thickness. For the purpose of hardening the lead used as above, the patentee prepares an alloy of equal parts of tin and zinc melted together, and adds five parts thereof to every ninety five parts of lead, stirring the metals well to produce perfect incorporation of the alloy. Or the hardening may be effected by the use of antimony in the proportion of from one part in fifteen to one part in nine of the lead. Or arsenic may be used with the lead for the same purpose, in the proportion of from one to two parts per cent.

Another improvement consists in coating zinc with lead, or the ductile alloys of lead, by pressure. Lead, hardened as first described, may be also used.

Another improvement is the combining of zinc or tin, or the ductile alloys of either of these metals with cadimum. The metals are rolled into sheets, and passed through the rolls in contact with each other, by which their union is effected.

Another improvement consists in coating copper and its ductile alloys with tin or the ductile alloys of that metal. This is also effected by pressure.

Another improvement consists in applying a coating of silver to tin, Britannia metal and other ductile alloys of tin by pressure; and in employing gold or platinum in like manner as a coating by combining the same with tin or the ductile alloys thereof. And here the patentee remarks with regard to the use of pressure for combining metals together, that the harder the metals are, the greater care is requisite in passing them through the rolls. In all cases the surfaces of the metals to be united should be perfectly smooth and clean.

Another mode of coating the more fusible metals, such as zinc, tin, or alloys thereof, with silver or platinum, consists in employing the process of casting the more fusible metals on to the less fusible, and consequently using pressure to bring the slabs to sheets of any required thickness.

Another improvement consists in soldering, or otherwise uniting by heat, German silver to copper and its alloys, and then extending the mass into sheets by rolling.

The last branch of the invention has relation to the manufacture of iron. The first of the improvements here specified consists in adding chromium to iron, in order to improve its quality. The chromium is used in the ore, that is as chrome iron, or chromate of iron, in the proportion of from 1-800 to 1-400th part of each puddling charge. It may be added, however, at an earlier stage of manufacture. When the iron is cold or red-short, the patentee adds from 1lb. to 3lbs. of a chloride (by preference chloride of sodium). The chromium is added to the iron when nearly or quite melted, in proportions which vary with the character of the metal operated on, soft iron requiring more than that which is of a harder nature. The chloride may be added at the same time, or when the metal is beginning to boil, and before coming to nature.

Another of the improvements consists in adding baryta, or its salts or compound, to iron. For this purpose the carbonate of baryta is preferred, which is used in the same manner as chromium, in the proportion of about 1lb. to every puddling charge.

Another improvement is the addition to iron of carbonate of lime and muriate of soda. These materials are mixed together in about equal parts, and two or three pounds of the mixture are introduced into the iron when in a melted state.

Another improvement consists in using an alloy of tin with arsenic, or of lead with arsenic, as coating for iron. The alloy being applied to the iron when hot, in the same manner as soldering or tinning is performed. The latter of these combinations will be found serviceable for shipbuilding purposes, and other similar uses. The iron may be previously coated with copper.

The last improvement consists in applying lead or lead ore in the manufacture of iron in blast furnaces; also in combining with lead, lead ore, or oxide of lead for such uses, chlorides, by preference chloride of sodium (common salt). The lead is added when charging the blast furnace in the proportion of 1lb. to 2lbs. to the charge, and the chloride (when used) is introduced at the same time, in the proportion of 15lbs. to 25lbs. to the charge. The iron thus made is free from impurities, and will be found very suitable for making wrought iron.

The Flower Garden.

We have frequently seen flower gardens laid out with the greatest care, and the utmost regularity; we have seen them garnished with the choicest flowers, but at the same time we have often lamented the want of taste or want of culture, call it what we may, in the arranging of flowers of different colors. Skill in laying out grounds, and great experience in taking care of and cultivating flowers are not the only qualities required in a florist, he should have an eye to the beautiful in color, the grouping and blending of all the hues which adorn the parterre. We are created to derive pleasure from colors equally with music; the charm of the former reaches the heart through the eye, that of the latter through the ear. There is no enjoyment of a simple nature, more pleasing and elevating, than that derived from the culture of flowers.—Surely when Solomon in all his glory was never arrayed like the flowers of the field, they should derive importance from their very nature; and the art of blending them—arranging them in the garden according to the laws of harmony in color—should be more assiduously cultivated by every one who has a square yard of garden plot.

Amongst the pleasures presented to us by the culture of flowering plants, there are few that exceed what we experience from the sight of a multitude of flowers varying in their color, form, and size, and in their arrangement upon the stem that supports them. It is probably owing to the admiration bestowed individually upon each, and to the attachment bestowed upon them in consequence of the great care they have required, that care has hitherto not been taken to arrange them in such a manner as not to produce the best possible effect upon the eye, not only separately but collectively. Nothing, therefore, is more common, than a defect of proportion observed in the manner in which flowers of the same color are made to recur in a garden. At one time the eye sees nothing but blue or white, at another it is dazzled by yellow scattered around in profusion; the evil effect of a predominating color may be further augmented, when the flowers are of approximating but still different shades of color. For instance, in the spring we meet with the jonquil of a brilliant yellow, side by side with the pale yellow of the narcissus; in the autumn the Indian pink may be seen next to the China rose and the astor, and dahlias of different red grouped togethor, &c. Approximations like these produce upon the eye of a person accustomed to judge of the effects of a contrast of colors, sensations that are quite as disagreeable as those experienced by the ear of a musician when struck by discordant sounds. The principal rule to be observed in the arrangement of flowers is to place the blue next to the orange, and the violet next to the yellow, whilst red and pink flowers are never seen to greater advantage than when surrounded by verdure, and by white flowers; the latter may also be advantageously dispersed among groups formed of blue and orange, and of violet and yellow flowers.—For although a clump of white flowers may produce but little effect when seen apart, it cannot be denied that the same flowers must be considered as indispensable to the adornment of a garden when they are seen suitably distributed amongst groups of flowers whose colors have been assorted according to the law of contrast. Plants, whose flowers are to produce a contrast should be of the same size, and in many cases the color of the sand or gravel composing the ground of the walks or beds of a garden, may be made to conduce to the general effect. In laying down the preceding rules, an arrangement of colors, different from that mentioned, may please the eye; but in adhering to them, we may always be certain of producing assemblages of color conformable to good taste, whilst we should not be equally sure of success in making other arrangements.

French Varnished Leather.

This process consists of two operations: first, the preparation of the skin; and second, the varnishing of the leather thus dressed.

In the preparation of the leather, linseed oil, made readily drying, by means of metallic oxides and salts, is employed as the basis; for each 22 gallons of linseed oil, 22 pounds of white lead and 22 pounds of litharge are employed, and the oil boiled with these ingredients until it has attained the consistence of a syrup. This preparation, mixed either with chalk or ochres, is applied to the leather, by means of appropriate tools, and well worked into the pores; three or four layers is applied in succession, taking care to dry each layer thoroughly before the application of the next coating. Four or five coatings of the dried linseed oil, without the admixture of the earthy substances, are then given; the addition of very fine ivory black, and some oil of turpentine, is usually made to the oil. These coatings are put on very thin, and when carefully dried, the leather is rubbed over with fine pumice stone powder, to render the surface perfectly smooth and even, for the reception of the varnish. The varnish is composed as follows:—10 pounds of the oil prepared as above, half a pound of asphalt or Jewish bitumen, five pounds of copal varnish, and ten pounds of turpentine. The oil and asphalt are first boiled together, and the copal varnish and bitumen added afterwards, and the mixture well stirred. Instead of asphalt, Prussian blue or ivory black may be employed. This varnish must be kept in a warm place for two or three weeks before it is fit for use.

The greatest possible care must be taken both before and during the application of the varnish, to prevent the adherence of any dust to the leather. The leather, when varnished, must be put into drying rooms, heated to about 90° or more according to the nature of the leather, and the varnish employed.

There has been for a week past a most tremendous discussion going on in the daily papers of this city, about a Railroad in Broadway, by one named "Anti-Monopoly," and another named "Pro Bono Publico." Of each combatant we can say—

"Thrice he routed all his foes,
And thrice he slew the slain."

We do not know what will be the result of this great conflict—it will, we believe, have to be settled on that momentous field, the Alderman's Tea Room.

© 1852 SCIENTIFIC AMERICAN, INC

NEW INVENTIONS.

Improvement in Power Looms.

Rennslaer Reynolds,of Valatie,Columbia Co., N. Y., has taken measures to secure a patent for valuable improvements in Power Looms. The first part of the improvements relates to the harness motion usually employed in plain weaving; he attaches the leaves, above and below, to straps, cords, or chains, which are connected to the peripheries of two rollers, whose axes are hung in suitable bearings one above and the other below the harness, in a plane which equally divides the space between the front and back leaves; the straps or cords, from the two leaves of the harness, pass in opposite directions around the rollers spoken of, hence, if a rocking motion be given to one roller, and the other be left free, one leaf will be raised and the other depressed alternately. It is a desideratum, in weaving at a high speed, that the warp be always opened to a certain width at the line where the shuttle passes through, and that the upper and lower threads of the shed always occupy the same position when the shed is open; if a suitable motion be given to keep the shed open, it only requires to be opened just wide enough for the shuttle to pass through; to do this the back leaf—that furthest from the filling or welt—must be moved further than the front leaf. The way to produce this difference in motion, consists in making that portion of the periphery of each of the rollers mentioned, to which the back leaf is attached, and which are termed compensating rollers, of a larger diameter than the portion to which the front leaf is attached; by properly regulating this difference in the parts of a roller, the required effect is produced. Another improvement relates to the stop motion of a loom; the fork of the common stop-motion, to arrest the action of the loom when a weft thread breaks, is made in one piece of steel or iron, and must really be made stronger than the work it has to perform, as the shuttle frequently strikes against them, if, by any accident, it is thrown from the raceway of the lay; when this happens, the tines are either bent or broken, and to repair this, the loom has to be stopped for a considerable time. The tines are detached by Mr. Reynold's plan, and they are inserted in an elastic socket, in which they can easily be placed; this allows of their being made of metal or wood, whalebone, or split rattan—the last material is preferable. The girl attending the loom keeps a number of spare tines on hand, and when one becomes bent or broken, she puts in another, and thus saves the labor of machinist and tenter in repairing the said stop-motion; the bent tines can be straightened again, and very slight interruptions are thus occasioned to repair such breakages.

The improvements of Mr. Reynolds enables power looms to be driven at a far higher velocity, than they now can be, and thus a most important impulse will be given to the art, as it respects economy in repairs, saving of time in stoppages, and the greater quantity of work done in a given time.

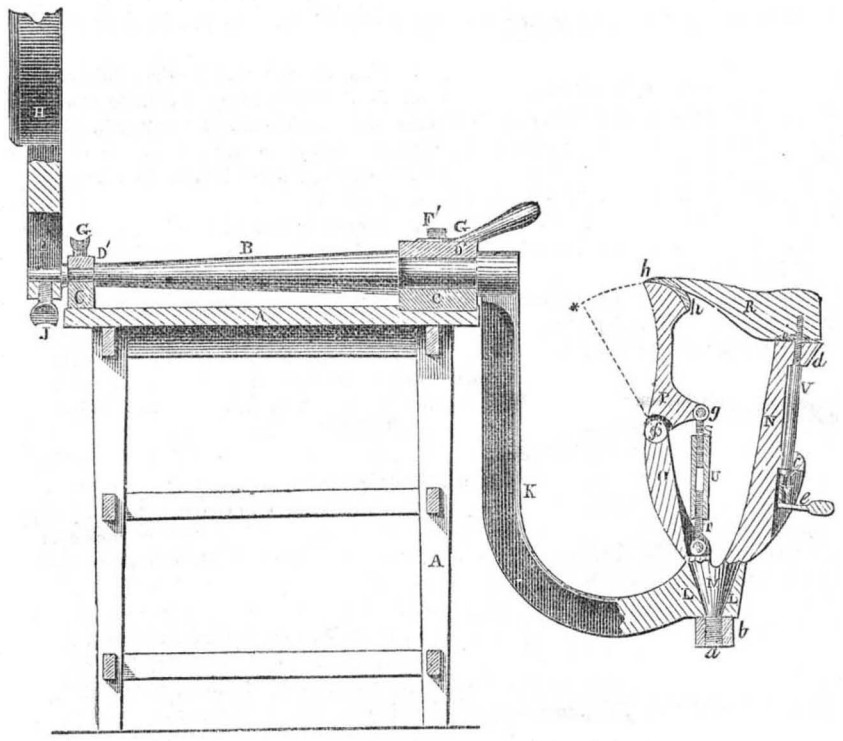
Metallic Packing for Stuffing Boxes and Pistons.

D. and C. W. Grannis, of Gowanda, Erie Co., N. Y., have taken measures to secure a patent for an improvement in metallic packings for stuffing boxes, &c. The nature of the improvement consists in the combination with two or more conical rings, which are compressed inwards or outwards by a hollow or solid cone of corresponding form, and of an interior or exterior metal ring, as the case may require, for the purpose of causing all the packing rings to expand or contract uniformly together. It also consists in a method of providing for the lateral vibration of the piston rod, caused by the irregularities of the engine; this has been attempted before, but the packing, though allowed to move laterally, has been compelled to do so in a line at right angles to the axis of the rod, and could not accommodate itself exactly to the deviation of it from its right line. To remedy this, Messrs. Grannis give the upper and lower ends of the packing a slightly curved form, for the purpose of allowing it to rock slightly, and thus adjust itself better to the rod, than where it has a confined lateral motion.

Improved Railroad Car Axles.

Robert M. Wade, of Wadesville, Clarke Co., Va., has taken measures to secure a patent for an improvement in railroad car axles. Instead of employing the ordinary solid single axle to unite two wheels together, he employs three axles bearing a relative proportion to the size of the axles now employed, and he sets them at a suitable distance apart, with a space between, and braces them together at the middle of their length, by a circular band. They are keyed to the wheels in the most suitable manner, and are like a sheaf of three small axles in place of a single one; they are set apart from the centre; in fact they perform the office of braces rather than axles. The axles to run in the journals of the truck, are short and stout, and do not extend but a few inches through the wheels; on the outside they serve, if cranked, for driving the wheels—if not, they serve the purpose of axles or journals to the wheels exclusively. The object of the inventor is prevention of accidents by the breaking of axles; it is contended that the three small axles or braces, are stronger than a single solid axle, also that if one breaks, there are two left to hold the wheels together. The main point, is, that a shorter and stouter journal or axle, can be used, and that there will be less strain upon it.

REVOLVING LAST HOLDER.



This engraving is a vertical longitudinal section of the Revolving Last Holder, invented by Henry G. Dewitt, of Napanock, Ulster Co., N. Y., and for which a patent was granted on the 9th of June last (1852).

A A is a platform or bench, upon which the horizontal shaft, B, is placed; C C are the bearing boxes of this shaft; they are composed of two parts, D D', which are connected together by a screw, F. This screw has a handle, G, to unlock the boxes, D D', of the shaft, to allow the shaft, B, to be revolved to move the last to any convenient position. H is a counterbalance attached to shaft B. K is the arm of said shaft; on the curved end of this arm there is a collar, L. In this collar the taper end, M, of the last holder fits snugly, and has a bearing. A screw, *a*, is cut on the end, M, of the supports, N O P, termed the holder. *b* is a nut on the screw; by this nut the position of the holder is regulated, and secured firmly to the arm, K, and collar, L. When it is desired to move the holder and last round to any position, it is only necessary for the nut to be turned and the holder revolved to the right position; the nut is then screwed up, for the purpose of making the holder stationary while the shoe is being finished. N O are two prongs or vertical standards of the holder; the prong, N, is designed as a rest for the heel portion of the last, and is made in one solid piece; through the projecting parts, *c d*, a vertical screw, V, passes up, and when a last is placed on the holder, this screw is turned to bind the last and retain it firmly in its position, until it is desired to alter the position of the boot or shoe which the shoemaker is stitching or pegging. The other prong, O, has a rest, P, secured to it by means of the fulcrum pin, *f*, on which it moves back and forth, when operated by means of the right and left screws, S T; the one, S, is secured to the projection, *g*, of the arm, P, and the other to the standard, O; a space is left between these screws, which is occupied by a link nut, U, which has right and left screws cut on its inner periphery. The screws, S T, work up and down in this nut, as desired; these screws adjust the rest, P, to allow a long or short boot or shoe being made in the holder. The top parts or rests, *h i*, of the standard, N, and arm, P, where the heel and toe of the last rest, are made of a proper shape to suit the form of the last. By bringing the holder in nearly a horizontal position, the screw which passes vertically up through the prong, N, may be secured into a pair of clamps, to hold them in an upright position, convenient for closing boots and shoes. This revolving last holder will surely be appreciated by all boot and shoemakers who are troubled with pains in the breast, dyspepsia, &c., and whose health would be greatly benefitted by standing in an upright position to their work. The boot or shoe can be turned and held in any position, to allow the operator to work upon it in the most proper and convenient manner.

More information may be obtained by letter addressed to Mr. Dewitt.

Improvement in Pumps.

Perhaps no class of inventions, if we except churns and washing machines, has received so much attention from the inventor as pumps and other apparatus for raising water. From the building of Jacob's Well, in the Holy Land, down to the present day, the genius of mankind has sought out many inventions to facilitate the supply of water necessary for all the purposes of life, luxury, and convenience. When we take into account that nearly three hundred patents have been issued in this country since 1800, for this branch alone, we would almost conclude that an end to improvement—if not already—must soon come; indeed, of late years, very few patents are issued for hydraulic apparatus.

In number 33, page 260, this volume of the Scientific American, we published an engraving of "Barker's Double Acting Force and Lifting Pump," and, since that time, we have learned something more about its working qualities; in our humble judgment, it is one of the best improvements in pumps which has been made in a great many years, and in saying this we also express the testimony of many who have used the pump and are now using it. We make these statements for the benefit of many of our readers who apply to us for information about such hydraulic machines. The pump was patented last February, and the claims are broad, strong, and reliable; they will be found on page 190.

For State or county rights, apply to A. Barker, Honesdale, Pa., or to J. A. Patmor, 239 Court street Brooklyn, N. Y.

Improved Spark Arrester.

V. P. & B. Kimball, of Watertown, Jefferson Co., N. Y, have invented an improvement on Spark Arresters. The improvement consists in the employment or use of a revolving screen, in combination with a chamber for creating a downward draught, said chamber being connected at its lower end with the smoke pipe at a point below the upper ends of the exhaust tubes. The screen allows the smoke to pass through, but it prevents the cinders, the most of which fall below when they touch the screen, some, however, adhere to it, these are removed as it revolves, and while the cinders are passing over the chamber spoken of, which has the downward draught.

A Submarine Rocket.

A mechanic of Charlestown, W. O. Stone, has invented what he calls a submarine rocket, or an infernal machine, for blowing up vessels of war. The rocket is made on the same general plan of a common air-rocket. It has a weight attached for sinking it, and a float to buoy it up. A fusee is placed on the extremity of the rocket, by means of which it is driven through the water, as the common rocket is through the air. The head of the rocket is furnished with a supply of gunpowder, in the centre of which is a bottle of sulphuric acid, and a quantity of chlorate of potassa and loaf sugar to explode the powder when it strikes the bottom of an enemy's ship.—[Boston Traveller.

[We suppose that the rocket must have a projecting pin, which, while the missle strikes a vessel, &c., will break the bottle containing vitriol and set it free among the chlorate of potass to ignite the said power. Unless their is an arrangement of this kind, there will be no certainty about the rocket; the idea is taken from another instrument.

To Cover Iron with a Coating of Copper.

It is well known that if a plate of iron be immersed in a solution of sulphate of copper, it speedily becomes coated with the copper in solution; but the copper thus deposited on the surface of the metal does not adhere firmly, and may readily be removed by friction. By means of the following process of M. Reinsch, the iron may be covered with a coating of copper as durable and firm as an electrotype deposit. The process is as follows:—Polish the iron by rubbing it well with cream of tartar, and afterwards with charcoal powder, and place the metal thus polished in hydrochloric acid, diluted with three times its volume of water, in which a few drops of solution of sulphate of copper have been poured; after a few minutes have expired, withdraw the iron and rub it with a piece of cloth, then replace it in the solution, to which add another portion of sulphate of copper. By following on this plan, and adding at each immersion a new supply of sulphate of copper, the layer of copper may be increased at pleasure. Lastly, introduce the iron thus coated with copper into a solution of soda, then wipe, clean, and polish with chalk.

Rosin Oil.

We have seen a number of accounts in cotemporary papers, about the good qualities of this oil for lubricating purposes; along with these accounts, we see the name of Louis S. Robinson coupled as the discoverer. Wm. L. Clough, of Jersey City, obtained a patent for making oil, in 1845, and to him, we believe, belongs the credit of making this oil by the distillation of resin at a very high heat. There may be other claimants, but Clough has a patent. Lubricating grease is made with rosin oil, into which has been stirred some dry warm lime in powder.

The art of hardening copper was long considered as lost; Monnet believed the ancients used arsenic for this purpose; Geoffry, iron; Morgez and Dize, tin. The last opinion was strengthened by the experiment of Hjelm, who found the proportions to be 83 7-8 copper, and 16½ tin.

© 1852 SCIENTIFIC AMERICAN, INC

Scientific American

NEW-YORK, AUGUST 14, 1852.

Accidents---their Cause and Cure.

We have said so much about accidents, that, were it not a duty which we owe to the community, we should not occupy our columns with a single word on the subject at present. Since the lamentable accident of the burning of the "Henry Clay," whereby seventy of our fellow creatures lost their lives within two hundred feet of the shore, in broad daylight, as noticed in the last number of the Scientific American, we have received a great number of communications, presenting different plans for the prevention of such catastrophies. One proposes an improvement in force pumps, to be worked by a capstan near the bow of the boat, for the extinguishment of fires; another proposes to line the boiler room and all around the steam and smoke pipes, with sheet or plate iron, filled in behind with plaster of Paris, or some other non-conductor, to prevent a boat taking fire; and another proposes that every person who travels by steamboat, or sailing vessel, should have some article of wearing apparel made into a buoyant life-preserver, to keep him or her from sinking in the water. It is laudable to present good plans for the prevention of such calamities, but that will afford no remedy, unless they are acted upon. If the Henry Clay had not been racing that day, does any person suppose she would have taken fire? Not one. And after she was on fire, if a stake had been hastily driven into the ground on shore, and a chain run out from it and secured to the stern of the burning boat, almost every one on board could have been passed along it to the beach and saved. But the unfortunate event has transpired, and no less than seventy families in our land, are clothed in sadness and grief. It is easy to account for such accidents; it requires only the exercise of a common judgment, but to prevent future accidents of a like nature, requires a thorough reform in national conduct and feeling. If prompt punishment were awarded to those who, by reckless conduct, conduce to such disasters, fear would act as a restraint upon all those placed in positions where human lives were under their charge for safety. But we well know, that, although hundreds have lost their lives by boiler explosions in our country, both on steamboats and in workshops, and although numbers have lost their lives by railroad accidents, where the most culpable recklessness and carelessness have been proven, yet in what case—a solitary case—has just punishment been meted out to the guilty? We know of no case in which this has been done. If severe and prompt punishment were dealt out to the really guilty, we should soon see an end of such accidents; it is for want of the good administration of justice, that so many accidents do take place. Are our courts corrupt—are magistrates debased, or what is the matter? How is it that men of wealth or political influence can get so many delays, checks, decisions, and counter decisions in our courts, so as to obstruct and nullify the aims of justice? These are serious questions—let our people take them to heart, and endeavor to find a remedy. We may make as many laws as we choose for the prevention of accidents by steamboat and railroad, and as many remedies may be suggested as would build a pile of plans high as the Andes; but unless our courts and magistrates do their duty, good laws will be worse than no laws, and good plans but a delusion and a mockery. The evil lies with our prosecuting magistrates and courts; if they did their duty we should have less cause for mourning.

Artificial Stone Fronts on Houses.

A great number of houses are now built with coarse brick fronts, which afterwards receive two or three coats of boiled oil, and are then covered with a coat of peculiar mastic cement, which is composed, we are told, mostly of dried sand, some boiled oil, some red lead, and a little plaster of Paris. This cement resembles moist sand when put on, but it sticks well, and in a short time becomes as hard as freestone, which it greatly resembles. This plaster is streaked off in blocks, and a building so covered looks like one built of dark brown polished freestone. We have heard objections made to such buildings, but not one by a person who had taste and experience in architecture. This cement does not scale off; it endures and forms a thorough coating of artificial stone. The only objection worthy of note, urged against them, that we have heard, is this—"after all, they are not so good as brick buildings, which are no shams;" these words we have marked, for they have appeared in print in a daily paper in our city, but the objection, urged against the artificial stone fronts, can be as strongly urged against the painting of any building. Paint is put on to preserve and beautify a building, and so is the artificial stone cement.

A New Fish Business.

During the past winter, the controversy respecting the resuscitation of frozen fish was effectually settled through our columns; a new fact to many was also brought to light, namely, the supplying of ponds with new kinds of fish brought from distant waters in a frozen state. We have also noticed in the Scientific American the mode of cultivating carp in the marshy ponds of France; but perhaps the most extraordinary discovery of the present day, in the fish line, is that by which they can be produced to an incalculable extent in streamlets, rivers, ponds, and lakes, by artificial means. This process within the past three years has been employed on a grand scale, with considerable success, in various parts of France. Two fishermen in the Department of Vosges, having noticed that the fine trout in the streams were fast declining in numbers, made it their business to investigate the cause. They discovered that not one egg in an hundred deposited in the beds of the rivers came to maturity, the rest being washed away or devoured by other fish. It struck them that if they were to collect the eggs and protect them from large fish, they would in a few years obtain a plentiful supply. They accordingly in imitation of fish, placed the eggs on a bed of gravel, put them into a box filled with holes, and sank it into the bed of a river. In due time they had an abundance of small trout, which they kept in clean water, out of danger, and supplied with fitting food. Applying this process for a few years, they have stocked a great number of the streams and rivers of France with millions of fine trout. This is a subject which should arrest the attention of people in our country.

A Railroad in Broadway.

It has been proposed, in our Common Council, on the application by petition, to build a railroad in Broadway, in order to relieve it of the enormous quantity of stages and other movable obstructions. The property holders in Broadway held a meeting last week, and passed a number of strong resolutions against the project. Here is one of them:—

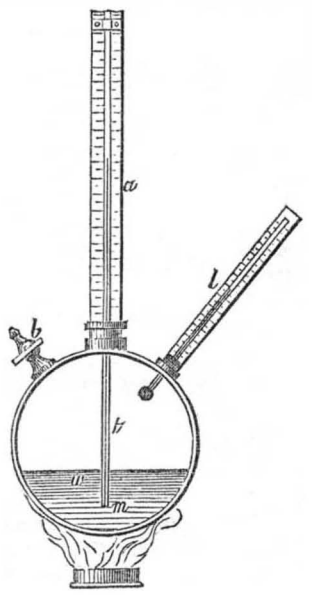
"Resolved, That the Railway will render Broadway, as is the Bowery now, because of its Railroad, a street through which none would pass unless compelled by necessity, preventing entirely the desire for its use for pleasure—depriving the citizens of the use of that fine promenade, now so much sought after, and enjoyed with so much zest."

We believe that the owners of property would be the gainers, as well as the public at large, by a railroad. Still it would be wrong and unjust to erect a railroad through that street, against the wishes of the owners of property in it. It is our opinion that beautiful railroad carriages would be less objectionable than clumsy stages, to those who promenade along that noble street—for beautiful it is not yet, but may be at some future period. The railroad cars would be more regular in their trips, and promenaders would not have to wait and run so much to avoid furious stages, as they now do, when crossing from one side to the other. A railroad would not entail any loss upon the owners of property nor those doing business in Broadway; still, if they think it would, their voice should be potent in the matter. One thing we do know—the obstructions to persons desirous of crossing the street below the City Hall Park, by crowds of carts and stages, demand some remedy. What shall it be? The owners of property should suggest some thing.

Steam.

The effect of heat is to convert many solids and liquids into vapor. Of all the vapors, we are most familiar with steam. Water, when converted into steam by heat, expands from a cubic inch to 1700 cubic inches. But a much larger quantity of heat enters into vapors than into liquids. If over a steady fire, a certain quantity of ice-cold water requires one hour to bring it to the boiling point, it will require a continuance of the same heat for five hours longer to boil it off entirely. Liquids do not become hotter after they begin to boil—a thermometer will not rise any higher if kept in a boiling vessel (after the water commences to boil) for a year. This fact is of importance to cooks in saving fuel; to boil meat in a gentle way, is just as efficacious as to boil it with great fury at the expense of a larger amount of charcoal.

The steam from boiling water is found to be no hotter than the water itself. What then becomes of the heat communicated to the water, since it is not indicated by the water or steam? As much heat disappears as is capable of raising the temperature of the water, which is converted into steam, 1000 degrees; this is now assumed to be about the latent heat of steam. A cubic inch of water, raised into steam, will, if confined in a tight vessel, and 5½ cubic inches of water, at 32°, injected into it, raise the whole of that quantity to 6½ cubic inches of water at 212°—that is, the steam will be condensed into water, and the cold water elevated 180° in temperature; this experiment proves the theory of latent heat.



Gay Lussac discovered that liquids were more easily converted into vapor when in contact with corrugated, than smooth surfaces; also that it boiled at two degrees higher in glass than metal vessels; this is a fact for boiler makers.

It is the pressure of the atmosphere, 15 lbs. on the square inch, which makes the temperature to be increased to 212° before it boils, for water will boil on the top of mountains at a much lower temperature, and in a vacuum at 150°. A high heat browns sugar, and advantage was taken of the low heat at which sugar boils in a vacuum, by a Mr. Howard, in England, who adopted the system of boiling his syrup in a tight-covered pan and pumping off the air and steam. The inventor of this improvement made a fortune.

Various liquids boil at different temperatures; hydrochloric ether boils at 52°, alcohol at 173°, water at 212°, whale oil at 630°, mercury at 662°; water, saturated with common salt, will not boil till it attains to 224°. Although steam, at the common atmospheric pressure, is never above nor below 212°, yet it can be, and is, increased in temperature by confinement under pressure. There is a great difference in the effects of low and high pressure steam upon the person. The steam of boiling water occasions a severe scald, it allowed to condense upon the body, but every engineer knows that his hand can be held, without scalding, in the exhaust steam of a high pressure engine, when it issues into the air; a thermometer placed in this steam shows it to be below 212°. This singular property of high pressure steam is connected with its great capacity of rapid expansion—in other words, the law of absorption in the gases of the atmosphere, whereby the heat is rapidly extracted from the steam in proportion to its expansive force.

The elastic force of steam at temperatures above 212° is determined by heating water in a stout globular vessel containing mercury, *m*, (as shown in the annexed figure), and water, *w*, and having a long glass tube, *t t*, screwed into it, open at both ends, and dipping into the mercury, with a scale, *a*, divided into inches, applied to it. The globular vessel has two other openings, into one of which a stopcock, *b*, is screwed, and into the other thermometer, *l*, having its bulb within the globe. The water is boiled in this vessel for some time, with the stopcock open so as to expel all the air. On shutting the stopcock, and continuing the heat, the temperature of the interior, as indicated by the thermometer, now rises above 212°, at which it was stationary while the steam generated was allowed to escape. The steam in the upper part of the globe becomes denser, more and more steam being produced, and forces the mercury to ascend in the gauge tube, *t*, to a height proportional to the elastic force of the steam. The height of the mercurial column is taken to express the elastic force or pressure of the steam produced at any particular temperature above 212°. The weight of the atmosphere itself is equivalent to a column of mercury of 30 inches, and this pressure has been overcome by the steam at 212°, before it began to act upon the mercurial gauge. For every thirty inches that the mercury is forced up in the gauge tube by the steam, it is said to have the pressure or elastic force of another atmosphere. Thus, when the mercury in the tube stands at thirty inches, the steam is said to be of two atmospheres; at 45 inches, of two and a half atmospheres; at 60 inches, of three atmospheres, and so on.

Woodworth Patent Pamphlets.

Any of our readers wanting a copy of the Report against the extension of the Woodworth Patent Planing Machine, in pamphlet form, can have one sent (post-paid) by enclosing two three-cent stamps. Its publication will occupy the remaining numbers of this volume at the rate of two columns each week.

In connection with this notice, we can hardly omit to furnish our readers with the names of the Committee on Patents in the House, to whom the whole country is deeply indebted for the satisfactory manner in which this affair is placed before them. Seldom have we read a more able and convincing report. D. K. Cartter, of Ohio, Chairman; M. M. Dimmick, of Pa., W. T. Ward, of Ky., Benj. H Thurston, of R. I., and Alexander White, of Ala. Gentlemen, we sincerely thank you for having nobly done your country service.

To Save from Drowning.

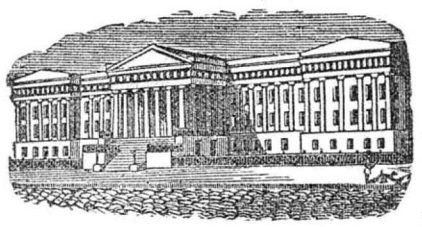
We have seen it stated in books and papers, that if a person falls by accident into deep water, he will float and not sink if he lies still and does not lift up his hands. The reason given is, that the head, having so much cavity or air space in it, will keep above the water, and thus prevent the body from sinking. This is certainly not correct; no person can float in deep water unless he has learned to do so by a great deal of practice. It is true that the body is more buoyant in salt than fresh water, but no person who cannot swim will float two minutes in sea or river,—he will soon sink, as we have seen in more than one case. All our young men should learn the art of swimming; it was part of the education of the early Romans, and should also be of the young men of our Republic.

Something Wanted for Engravers.

A substitute for boxwood, for wood engraving, is much wanted. This wood is very scarce; it costs $500 per ton, and is all imported from Turkey and Italy; various kinds of wood have been tried to supersede it, but not one among all the varieties tried, has the same qualities. Hardness is not the only quality, it must be close in the grain and free from breaking before the graver. Type metal, with some change in the form of tools, may supersede it; the price of boxwood is getting higher every year.

The readers of the Scientific American will have the able Report of Mr. Cartter to bind up in this volume.

© 1852 SCIENTIFIC AMERICAN, INC



Reported Officially for the Scientific American

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING AUGUST 3, 1852

RAILROAD CAR SEATS—By C. P. Bailey, of Zanesville, O.: I claim in combination with a permanent seat or seats, a divided back, which is so constructed, that one part thereof shall swing around one end of the seat, and the other part around the other end thereof, the back always retaining its upright position, and by which arrangement, the two parts of the back may be entirely reversed, or they may be left tete-a-tete, substantially as described.

[See engraving in No. 45, page 356, this volume of the Sci. Am.]

LOOMS FOR WEAVING FIGURED FABRICS—By C. W. Blanchard, of Clinton, Mass.: I do not claim the application of the above-named levers to the trap or knot boards of the jacquard loom; but I claim, first, the opening or raising and depressing the harness by means of levers or bars oscillating about a fixed point or points, in connection with hooks, or their equivalents, which catch upon these levers or bars, and which constitute a part of the connections between the top and bottom jack levers cords or other devices, for raising and drawing down the harness, thus raising or depressing the heddles in a greater or less degree according as they are more or less distant from the fell or cloth making point, the motions of the harness all commencing and ending at the same time, as described.

I also claim the method, as described, of arranging and combining the parts for moving the figuring chain or cylinder, with the other parts of the machine, so as to carry the said chain or cylinder, back as well as forward as the machine is made to move backward and forward.

PRESSURE GAUGES—By Eugene Bourdon, of Paris, France. Patented in France June 18, 1849: I claim the application of curved or twisted tubes, whose transverse section differs from a circular form for the construction of instruments for measuring, indicating, and regulating the pressure and temperature of fluids, substantially as described.

DUMPING WAGONS—By Thos. Castor, of Frankford, Pa.: I claim the arrangement of the body on a fixed roller fulcrum on the frame of the running gear, in such manner that, by a slight amount of force, the body can be turned, to give its under side, which rests on the roller, either a forward or backward inclination, to cause the weight of its load to tend to hold it forward or back, as it is required to carry or to dump the same, substantially as set forth.

TALLY BOARD—By F. N. Clark, of Chicago, Ill.: I do not confine myself to any particular form or manner of arranging the screw rods over the board; nor to any particular manner of graduating the spaces; but I claim the manner of tallying or keeping an account of articles, as they are delivered or moved by means of screw rods, having nuts upon them, said nuts being placed over graduated spaces, which indicate the distance the nuts have moved, or give the number of turns or half turns of the rods, the rods, nuts, and spaces being arranged as described, or in any manner substantially the same.

CASTING STEREOTYPE PLATES—By H. P. Cook, of Albany, N. Y.: I claim the manner of casting stereotype plates by the application of pressure upon the surface of the melted metal in the inner kettle, which pressure forces the metal, while fluid, through a tube and upon the mould, the face of the mould being turned down to receive the metal, making the casting, the whole acting substantially in the manner and upon the principles set forth.

LOOMS FOR WEAVING FIGURED FABRICS—By S. & J. Eccles, of Kensington, Pa.: We claim, first, the star movers, whether they be arranged to slide, instead of the star wheel, or otherwise, and neutral surface, in combination with the star wheel (sliding or otherwise) arranged substantially in the manner and for the purpose specified.

Second, we claim the pins or pattern plates, or their equivalents, in combination with the diamond-shaped projection or four-sided inclined plane lever, and star wheel, arranged substantially as described, for the purpose specified.

Third, we claim the guide in combination with star movers, and star wheel, as described.

Fourth, we claim the combination formed by the mechanism described, for giving a positive and correct motion to the jacquard card cylinder; that is to say, the star mover, star wheel, and connecting arms, with mitre wheels, or their equivalents, as made known; and the above mechanism is also intended to be applied to other description of looms, where lags and other similar devices are used, instead of the cards, as on barrel and other similar looms,—therefore the claim is not limited to the turning of a jacquard card cylinder.

ADJUSTING THE CHASERS IN SCREW CUTTING STOCKS—By M. C. Gardner, of Brockport, N. Y.: I claim the adjustable band on which the index is lettered, for adjusting the index to the chasers, the same being adjustable to the wear of the chasers or chasers of different lengths, and in combination with suitable apparatus for causing said chasers to approach and recede from a common centre, for the purposes stated.

And I also claim the shaft, as shown, in combination with pinions, and the bevel gear wheel, at the outer end of which shaft is attached a crank, to drive the bevel gear wheel, as set forth and described, and for the purposes stated.

SCALES FOR WEIGHING—By Wm. P. Goolman & Wm. Holtseclaw, Jr., of Springtown, Ind.: We claim the making of the weighing beam of platform or other balances, or scales with two graduated arms extending in opposite directions from the fulcrum of said beam, and applying one or more movable weights or peas to each of them: the divisions on one arm, indicating the larger divisions of weight, and those on the other, any subdivisions or fractions of the larger that may be desired, substantially as set forth.

JACQUARD LOOMS—By John Goulding, of Worcester, Mass.: I claim, first, connecting the knot and trap boards with, and operating them by levers arranged substantially as described, so that the second row of heddles or harness shall fall and rise so much farther than the first, and the third than the second, and so on through the entire series of heddles or harness, that, as the warp is sprung, the threads in the same shed from each row of heddles, whether front, middle, or back, and whether sprung in the top or bottom shed, all lie substantially in the same plane.

Second, the apparatus which inserts and draws the wires to form the pile, constructed and operated substantially as described.

Third, the devices for locking and unlocking the beam or beams containing the warp, substantially as described.

OX YOKES—By Ezra Hough, of St. Johnsville, N. Y.: I do not claim the slides, independently of their connection, as they have been previously used; but I claim the connecting of the slide, in which the bows are secured by means of the chains and rods, the chains passing over the pulleys, by which neither of the slides nor bows can be moved laterally without communicating a corresponding opposite motion to the other, thus keeping the oxen at all times at equal distances from the centre of the yoke, the chains, rods, and pulley arranged as described, or in any other manner substantially the same.

ELASTIC HORSE-SHOE—By J. O. Jones, of Newton, Mass.: I claim the shoe formed with two plates, between which a sheet of vulcanized rubber, or other elastic substance is interposed, in the manner and for the purpose set forth.

SCYTHE FASTENINGS—By Alpheus Kimball, of Fitchburg, Mass.: I claim to make the fastening bolt of the toe act against the side of the toe, or laterally against the shank, in combination with making it, or the bolt and shank, with the peculiar curved projection and recess, and the flattened face stirrup, or confining contrivance of the heel of the shank, so as to allow of the lateral position of the heel being changed or varied, as specified, whereby the angle of the shank part of the snath and of the blade, may not only be varied to any extent within certain limits, but the toe of the shank as usually made, confined down by other means, than that which operates to secure the shank (at its heel) to the snath.

RE-ISSUE.

MANUFACTURE OF BULLETS, &c.—By George W. Campbell, of New York City. Originally patented Nov. 27, 1847: I claim the method of casting bullets, &c, in a succession of connected moulds, is jointing them together, so that they shall separately come together in vertical planes at right angles to the line of motion of the series, or nearly so, substantially as specified.

DESIGNS.

COOKING STOVE—By Samuel Eberly, of Mechanicsburgh, Pa.

WATER COOLER—By Patrick Molony, of Cincinnati, Ohio.

COOKING STOVE—By Russell Wheeler & Stephen A. Bailey, of Utica, N. Y.

COOKING STOVE—By Garretson Smith, H. Brown, and Julius Holtzer, (assignors to North, Harrison & Chase), of Philadelphia, Pa.

Woodworth Patent.

[Continued from page 374.]

Where an application like this is made for a third extension, it is material to consider the degree of merit in the invention, the extent of remuneration already received, the manner in which the previous bounty of Congress has been applied, the mode in which the power hitherto vested in the applicant has been exercised, the operation of the previous grant upon the public interests, the effect of a new grant upon the rights of other citizens, and the nature and extent of the new burden to be imposed upon the country for a long series of years.

It is not claimed that William Woodworth, in 1828, invented anything more than an improvement in the method of dressing boards by machinery. Planing machines had been for many years in extensive use in the United States as well as in Europe. The inventions of Bentham, Bramah, and Muir, in Great Britain, of Roguin and De Manneville in France, of Hill, Hale, Minor, and others in this country, were known to the world. That many of these were valuable and effective machines, is attested by the fact, that in many localities they are still used in preference to the Woodworth machine; and that by adapting to them the improvements of other recent inventions, the most successful machines of the present day have been produced. The affidavits furnished by the administrator on his application for the first extension, show that the Woodworth invention, for some years after the patent, was a failure in practical operation.—The fact hardly seems to be disputed, that no machine built in conformity with the description in the patent of 1828, ever was or ever could be successful. The fact is undisputed that the valuable features of the present Woodworth machine were first described in the patent of Uri Emmons, which expired and became public property in 1843. The fact is also undisputed that Emmons would not permit his improvements to be incorporated in Woodworth's machine, until Woodworth obtained his consent by uniting with him in a mutual and equal partition of the whole country between them. The fact is undisputed that since the introduction of the features of the Emmons patent into the Woodworth machine, it has become successful and valuable. Long after the death of both the patentees, an attempt was made to prove that Emmons had no right to what he sold, and that Woodworth owned, before the purchase, the right which he acquired under it. The attempt was successful in the Pennsylvania circuit; but the question is now at rest, having been finally disposed of by the decision of the Supreme Court of the United States in the case of Wilson vs. Simpson, overturning the allegation that Woodworth was imposed upon by Emmons, and holding that the evidence was illegal by which the fact was sought to be established. (9 Howard's U. S. R. 120.) In the recent case of Brooks et al. vs. Fiske et al., decided in the first circuit of the United States, it was held that the Woodworth machine was merely an improvement on the Hill machine. In the circuit court over which Chief Justice Taney presides, the fact was found by the verdict of the Maryland jury, that the patent re-issued to the administrator in 1845, was for an invention different from that secured to his father by the patent of 1828.

That the improvement devised by Woodworth was meritorious is undoubtedly true; but that it is equally so with improvements in planing machines, since made by other inventors, will scarcely be contended. Yet it has demanded and received a larger bounty probably, from the government, than any twelve of the most prominent American inventions in the leading departments of mechanical genius. William Woodworth, the patentee, who best knew how much of the machine was his own invention, did not claim to be the inventor of the combinations which are put forth in the claim of the patent as re-issued to his administrator five years after his death. Indeed, one of the publications left with the committee by the memorialist in support of his application, contains the affidavit of the patentee, made the year before his death, in which he substantially repudiates, as forming no part of his invention of 1828, the very combinations afterwards claimed in the re-issue; and swears that another machine, containing those combinations, which has long since become public property, was no infringment upon the patent. If that patent has since his death acquired an additional value by absorbing all other improvements in the expanded claims of the re-issue, it is rather to be regarded as the misfortune of the country, than the merit of the patentee.

The estimate placed by William Woodworth upon the value of his invention in 1828, the year when he obtained his patent, is shown by his sale to Strong of half the right in the United States for fifteen hundred dollars. In 1842, William W. Woodworth, on applying for the first extension, submitted, in support of his claim, the affidavit of James G. Wilson, estimating the value of the invention at three hundred thousand dollars. The memorialist claims to have sold to Wilson in 1845 the entire right in the United States, except in the city of New York, for the whole extended term of seven years, for fifty thousand dollars. If these practical tests of value are to be regarded, the immense tribute from the public for the first ninety days of the extended term vastly overpaid the whole value of the invention.

The committee felt the importance of ascertaining the extent of remuneration received by the memorialist through sales of rights, and licenses to use the machine under the Woodworth patent; and urged upon him strongly the importance of furnishing this information. The administrator thought proper not to comply with this request of the committee. They might, with entire propriety under these circumstances, apply the rule that when a party possessing the means of knowledge chooses to withhold it, and declines to disclose facts material to the inquiry, every presumption is to be taken against him. But the committee were not inclined to indulge any such presumption, and they accordingly resorted for information to the records of the Patent Office, the various documents before them, and the various papers filed by the memorialist on former applications in relation to the patent.

The abstracts furnished from the records of the patent office show very clearly, that the papers upon which the board acted in granting the first extension, as well as those upon which Congress acted in granting the second extension, failed to disclose the true amounts which had accrued from the invention. The memorials to the last and present Congress do not assume to give any account of the receipts of the administrator. The memorial to Congress during the session of 1844–5, professed to give an unsworn statement of receipts and expenses, though in a very vague and general form. But this extended only to its date, leaving four years and nine months of the unexpired term of the first extension still to come. For the receipts of this period of nearly five years, no account is given in any of the memorials. Nor is any credit given by the memorialist for the proceeds in damages and costs of those innumerable suits against "wealthy infringers," in which he claims to have been so uniformly successful; though the expense of those litigations is brought in upon the other side as a claim against the government. Nor is any credit given for the enormous sums paid to those to whom the administrator from time to time assigned shares in the public bounty of which he was the beneficiary. Upon what understanding these assignments were made, the committee do not know, except so far as it may be inferred from the continued amicable relations of the parties, the unbroken succession of conveyances through the whole period to the same grantee, and the common exertions of both parties in each instance down to the present time for further grants from government, in the name of the administrator. But even upon the showing of the applicant himself in his various memorials, corrected as to some errors by facts subsequently developed, it would seem that $52,733 32 had accrued to William Woodworth from the invention prior to his death; and that the amount which had accrued personally to W. W. Woodworth, administrator, prior to June, 1845, including the amount of sales by his father, was $264,013 32; leaving still unaccounted for, all that remained in his hands of the unexpired term of over four years of the first extension; the reservation in the grant to Wilson, under the second extension, of the city of New York, the most valuable right in the country; all the proceeds of the litigations; all the receipts by himself and his father from the various machines in the running of which they were themselves interested; and all the proceeds of the sale of the re-issued patent, which was granted to Woodworth on the 8th of July following, and conveyed to Wilson on the following day.

Assuming that these were all the returns which had been received from the invention, and that they could be estimated collectively at as low a sum even as half a million of dollars, does it not seem incredible that a further claim should be made upon the bounty of the government? But this is not all.

[To be Continued]

New Steamers.

Two first-class steamers called the Andes and Alps, are at present building at Dumbarton on the Clyde, for Messrs. Burns, and are intended to run between Chagres and New York. A ship of 2,000 tons is now building in Liverpool, of soft wood, and on the model of the American ships, to prove by experiment in how far English ship-builders can compete in cheapness with Americans A steamer of 213 tons, named Lady le Marchant, and owned by a company in Newfoundland, was launched at Greenock on the 21st. She is intended to ply along the Newfoundland coast.

Balloon and Steam Engine.

Another attempt was recently made at the Hippodrome, Paris, to solve the problem of steering ballons. A balloon, in shape like a whale, was filled with gas and attempted to be guided by means of a shaft of wood suspended horizontally with a sail at the end, to act as rudder. To this shaft was affixed a platform with a steam engine of four horse power, working a screw with three terminal paddles like three sails of a windmill. The experiment was made in presence of several scientific men, but was unsuccessful.

Some very important experiments have recently been made with anchors, in England—an American one among the number.

© 1852 SCIENTIFIC AMERICAN, INC

TO CORRESPONDENTS.

J. P. N., of N. Y —Your plan about the hat has suggested itself to us a number of times, but we have never spoken about it, nor have we ever seen the same thing described in print. You would be justly entitled to a patent, if nothing of the kind has been presented to the Patent Office before, because you have first described it to another.

G. T. W., of Ct.—If you look on page 222, this volume Sci. Am., you will find the same plan as yours fully described, for extinguishing fires in steamboats.

S. R., of Mass.—You are not to infer from the remarks made by us that we have not fully answered the question—will saltpetre explode? that is the explosive interrogation. It will when combined with sulphur and charcoal.

G. W C., of Boston—To avail yourself of the advantages offered by Mr Ray, you will be required to send a model and explain it to the committee to be appointed by the Institute. The Fair commences Oct. 1st. We cannot answer your other question.

J. W. R., of Ohio—We cannot give you the information about corn starch. Wheat contains about 65 per cent. of starch, and Indian corn the same, a like process, we suppose, is employed for both.

Composer, of N. Y.—We have not been able to decypher all your letter—the style is very peculiar: we believe it is all correct: if it had been plain we should have published it.

V. E. R., of Ill.—We cannot procure an examination of your case out of its turn. You must patiently await the action of the Patent Office.

A. P., of L. I.—We have never seen a quartz grinder on the same plan as yours; as to its practicability we are unable to decide. Cochran's machine is powerful and very simple in its construction.

S. B., of Ind.—We do not perceive novelty sufficient in your improved shingle machine to warrant an application Welch & Walker's Shaving Machine we should judge to perform the important functions claimed by you.

F. R. B, of Pa.—We do not perceive anything new or patentable in your plan of rotary; it is not possible to obtain a patent for the mere application of a well-known principle.

H. G., of Mo.—Your improved method of constructing hearths for fire-places, we think is new, it is so far as our knowledge extends. There is as much objection as advantage to your bolts, they could not be drawn when necessary; no patent could be obtained.

J. C., of N. J.—Hollow grate bars are well known. In Vol. 3, Sci. Am., you will find an engraving of them; they are also employed in Dimpfel's Coal Burning Locomotive.

Dr. A B., of Ohio—In No 44 you will find definite information about sewing machines. We cannot think of any concern to refer you in regard to the Gold Seeker.

E. H. B, of Ill.—We could not publish your reply without bringing us into a collision with the party referred to. We have made use of the information elsewhere.

D. H, of Ohio—Your method of constructing railroad car seats could not be patented, as the same thing is in common use here for office chairs.

C. H. S, of N. Y.—We fail to get a clear understanding of your improvement in machines for cutting grain from the very imperfect sketch. We cannot decide upon it without a model, or a better sketch and description.

S. L, of Mass.—In the hold of a ship, an Annihilator would be very useful; this we have always asserted.

R. M. K, of Pa —If you use some lime and soda lye, you will find that a caustic effect will be produced, powerful enough for all your purposes.

W. C, of Mich —You should get an engraving of your invention published in the Sci Am. You will profit greatly thereby, for it will at once spread your invention before the whole country.

W McA., of Va.—The new patent law of England is much better than the old one, although there are still some very bad features in it. We have no doubt but more patents will be taken out now than before. We will attend to your business at the earliest opportunity. We have great facilities for doing the business well and with despatch.

S. S., of Pa.—Prof. Fyfe has clearly proven the water gas to be inferior to that produced from coal; we have had too much gas from various quarters during the past two years.

J. D., of N. J.—We do not care about ignorant flings, and the person who made the attack, as you have justly remarked, was not worth the expense of ink to answer, for he told untruths, and the oracle that endorsed them is not worthy of credit.

P. B. L, of Vt.—You should not be afraid of a little expense when the certainty of making a good deal by your patent is before you, that is if you are judicious in extending a knowledge of its qualities.

R. W., of Conn.—Do not put yourself to any expense in making a model for your aerial steamship, it will never sail.

A D. H., of N. Y.—We hope you will send the model soon for your own sake, it is a valuable improvement, and a patent is certain.

A. R., of N. Y.—Cochran's machine is in operation every day, we believe at Waterman's block factory, Williamsburgh, between the hours of 4 and 6 P. M.

S. B. R., of R I.—Your propeller has been examned, and we would refer you to Vol. 5, Sci. Am., for a representation of one like it. If you have got that volume you will see the resemblance, if not we can forward you the History of Propellers.

F. M., of Ct.—You wish to know about your spring and balance wheel being made to drive machinery with a ten horse-power by a one horse power engine. We say, do not expend a cent on your plan; you cannot do it; to make your spring and wheel give out ten horse-power, you must put ten horse-power into them by your engine.

W. M., of Ga.—A propeller in a trunk or case has been employed on canals. We do not see how an effective propeller can be made as light by your plan as by the present mode. The propellers employed are only sections of a screw, the useless parts being cut away. This certainly is the best plan, and experience has proven it to be so, even when the surface of the screw is greatly reduced.

C. S. A., of D. C.—We are not in possession of any accounts of experiments which describe the velocity of air in a vacuum, through a tube five miles long. Some experiments were made in France to drive machinery by compressed air, at the end of a pipe one and a half miles long; the experiments were a failure, but there is a compressed air engine working in a coal mine in Glasgow, Scotland. About the breaking of the tube, is certainly an exaggeration. There is a want of information on the subject you speak of.

S. T. McE., of Ga.—There is not a single good work in existence on Millwrighting such as you want. We know nothing about a patent of one Killgo. We cannot see anything in the sketch you have sent us, to warrant you to conclude that a patent might be secured; a model, however, would enable us to judge better of its utility, but we do not advise you to go to much expense for this.

R. W., of N. Y —There is authority for your assertion, about the benefits conferred upon society by a cheap scientific paper like the Sci. Am. Our next Volume will be still better than this; we have improved, and intend to keep improving: we are advocates of progress and improvement, and intend to exhibit a good example. We hope to see the hollow brick come into use soon; we want to see all frame houses abolished especially in cities and villages; they are the fruitful causes of extensive conflagrations.

Money received on account of Patent Office business for the week ending Saturday, Aug. 7:

R. H. T., of N. Y., $40; C B. H., of N. Y., $30; M. H. C., of Pa, $30; H. W. W., of N. Y, $20; L. P. & W. F. D., of N. Y., $25; R. M. W., of Va, $20; S K. W., of S. C., $30: T. S., of Pa., $30; G. P., of Md., $20.

Back Numbers and Volumes.

In reply to many interrogatories as to what back numbers and volumes of the Scientific American can be furnished, we make the following statement:

Of Volumes 1, 2 and 3—none.

Of Volume 4, about 20 Nos.; price 50 cts.

Of Volume 5, all but 4 numbers, price, in sheets, $1.

Of Volume 6, all; price in sheets, $2; bound, $2.75

Of Vol. 7, all back numbers at subscription price.

Patent Claims.

Persons desiring the claims of any invention which has been patented within fourteen years, can obtain a copy by addressing a letter to this office;—stating the name of the patentee, and enclosing one dollar as fee for copying.

Patent Laws, and Guide to Inventors.

We publish, and have for sale, the Patent Laws of the United States. The pamphlet contains not only the laws but all information touching the rules and regulation of the Patent Office. Price 12 1-2 cts. per copy.

ADVERTISEMENTS.

Terms of Advertising.

4 lines, for each insertion,	-	-	50cts.
8 " " "	-	-	$1,00
12 " " "	-	-	$1,50
16 " " "	-	-	$2,00

Advertisements exceeding 16 lines cannot be admitted; neither can engravings be inserted in the advertising columns at any price.

☞ All advertisements must be paid for before inserting.

American and Foreign Patent Agency

IMPORTANT TO INVENTORS.—The undersigned having for several years been extensively engaged in procuring Letters Patent for new mechanical and chemical inventions, offer their services to inventors upon the most reasonable terms. All business entrusted to their charge is strictly confidential. Private consultations are held with inventors at their office from 9 A. M., until 4 P. M. Inventors, however, need not incur the expense of attending in person, as the preliminaries can all be arranged by letter. Models can be sent with safety by express or any other convenient medium. They should not be over 1 foot square in size, if possible.

Having Agents located in the chief cities of Europe, our facilities for obtaining Foreign Patents are unequalled. This branch of our business receives the especial attention of one of the members of the firm, who is prepared to advise with inventors and manufacturers at all times, relating to Foreign Patents.

MUNN & CO., Scientific American Office,
128 Fulton street, New York.

PATENT RIGHTS FOR SALE—The subscriber having secured a patent on his improvement in operating doors to houses, would like to dispose of town, county, or State rights, on very cheap terms. The invention is a good one, and has fourteen years protection by Letters Patent. Engravings of this invention will be found in another column of this paper, and for further particulars address WM. RIPPON, Providence, R I. 48 4*

IMPORTANT TO ENGINEERS, MACHINISTS and Draughtsmen—The subscribers have ready 7 parts of the celebrated Treatise on "American Engineering," viz., Division A, River Boat Engines, parts 1 and 2, containing each two plates 24 by 30, being the side and front elevations of the steamboat Reindeer's beam engines; parts 3 and 4, each four plates, being details of the same. Division D, Stationary Engines, each two plates 24 by 30; part 1, vertical steam engine, by Ehman Banks & Co., N. Y.; part 2, high-pressure engine, by Glute Bros, Schenectady Division C, No. 1, of Locomotives, has the Columbia Engine, now running with much success on the Hudson River R R., also the celebrated prize locomotive "Bavaria," now in operation on the Vienna and Trieste (Austria) R R.; each Division, of 6 parts, will be complete in itself. Any person forwarding us 6 subscriptions, for either part, will be entitled to an extra copy. Price for each part $1. HENRY S. SAMUELS & CO, Publishers, 8 Park Place, N. Y. 1*

EVERETT'S PATENT CARRIAGE COUPLING, for turning in a small space with large fore-wheels (see Sci. Am., No. 36, Vol. 6). For rights or agencies to sell the same in the New England and North Western States, also California and Oregon address EDWARD EVERETT, Quincy, Illinois; or in the Southern and South-western States, also Pennsylvania, Ohio, Kentucky, and Tennesee, address CHARLES EVERETT, Washington, D. C. 43 3eow*

IMPORTANT TO IRON FOUNDRIES—The Galvanic Alloy Manufacturing Co., Nos. 401, 403, and 405 Cherry st., N. Y., will furnish the Aerostatic Fan Blower at $55, and with patent fitting at $65, that produce sufficient blast for the largest cupola, melting 3 and 4 tons of iron per hour; taking less than one half the power of those now in use, that cost from $80 to $100. The wings, being only about an inch in width (planned upon entirely new and mathematical principles), produce double the blast with half the power of other blowers. Warranted in all cases, or they may be returned and the money refunded. 38 eowtf.

IMPORTANT TO SOAP MAKERS—Letters Patent of the United States having been issued to Wm. McCord on the 27th of July, for a valuable improvement in Soap, all manufacturers, venders, and users are hereby cautioned against the use of Kaolin, or other equivalent aluminous minerals, combined with ammonia, as they will, by so doing, infringe this patent, and subject themselves to prosecution. Rights to manufacture this the most valuable soap, are offered for sale on reasonable terms. Apply to WM. McCORD, 141 Sullivan st., N. Y. 47tf

IRON FOUNDERS MATERIALS—viz.: good American Pig Iron—grey, mottled and white; No. 1 Scotch Pig Iron, of favorite brands. Pulverized Sea Coal, Anthracite Charcoal, Soapstone, and Black Lead Facings. English and Scotch patent Fire Bricks—plain, arch, and circular, for cupolas. Fire Sand and Fire Clay. Iron and brass moulding sand; Core sand and flour; always on hand and for sale by G. O ROBERTSON, 135 Water street (corner of Pine), N. Y. 47 6*

PIG IRON MANUFACTURED WITHOUT A BLAST—Persons taking an interest in this matter, or desiring to participate in bringing this new process to perfection, will please to address the subscriber, post-paid. C. S. QUILLIARD.
Rondout, Ulster Co., N. Y. 47 4*

JOHN W. GRIFFITHS—Ship Builder and Marine Architect, 658 Fourth st., N. Y., furnishes models and draughts of all description of vessels, with the computation of stability, capacity, displacement, and necessary amount of impulsion. Propelling power located and proportionably adapted to the form of the vessel, whether sailing or steaming. Mr. G. also superintends the construction of vessels, and may be consulted upon all subjects pertaining to the various departments of the science or practice of ship building. Draughts forwarded by letter to all parts of the world, and to any desired scale; all letters must be post-paid. 46 5*

PATENT DRAWING BOARDS,—23 by 29 inches; with scales of degrees in inches, minutely divided Also paper fastener attached, and T rule. Complete for $10. Sent by Express. Direct (post-paid) to H. W. CHAMBERLIN,
45 tf Pittsfield, Mass.

GWYNNES & SHEFFIELD, Manufacturers of Stave Machinery, Urbana, Ohio.—Our machine for slack work, called the Mowrey Stave Cutter, will cut, dress, and joint, at one operation, from the bolt of wood, in a perfect manner, at the rate of 80 staves per minute, more staves in ten hours than 100 men can set up into barrels in the same time, and at small cost. We are also prepared to furnish the Judson Stave Dresser, for tight barrel work, and other stave Machinery. 44 4*

AARON KILBORN, 4 Howard street, New Haven, Ct, manufactures Steam Engines, Shafting, Presses, Fan Blowers, Lathes, Planers, Artesian Wells, Chain and Force Pumps, Pipe, Heating Apparatus for Houses, etc. 42 10*

PATENT ALARM WHISTLE.—Indicators for speaking pipes, for the use of hotels, steamships, factories, store-houses, private dwellings, etc. etc. This instrument is intended to supersede the use of the bell, being more simple in its arrangement, more effective in its operation, and much less liable to get out of order, being directly connected with the speaking pipe, it requires no lengthy wires in its use, which are continually getting out of order or breaking. There have been several hundreds of them fitted up in this city and vicinity with the greatest success. They can be attached to pipes, which are already fitted up without damage to buildings, and for much less than the cost of a bell, and warranted to operate. The public are invited to call and examine them at the factory of the patentees.

WOOLCOCKS & OSTRANDER.
57 Ann street, New York.
State and County Rights for sale. 40 13

FOR SALE—A complete set of tools for the manufacture of Spring Head Callipers and Dividers, four sizes each. To any person wishing to engage in the manufacture of such articles, an opportunity is offered for purchasing the tools at a very reasonable rate. Inquire of W. J. JOHNSON, Holyoke, Mass. 45 4*

TO BRIDGE BUILDERS—WANTED, an experienced Bridge Builder, to take the building of the Plank Road Bridge over the Sallapoosa River, near Montgomery, Alabama. Address "W," box 564, New York Post Office, with references. 47 2*

CHILDS & TAINTER, Worcester, Mass, Builders of Daniel's Planers, with Read's feed motion, which gives the advantage of planing both ways, and of running slow or fast, either way. 45 6*

BEARDSLEE'S PATENT PLANING MACHINE, for Planing, Tonguing and Grooving Boards and Plank.—This recently patented machine is now in successful operation at the Machine shop and Foundry of Messrs. F. & T. Townsend, Albany N. Y.; where it can be seen. It produces work superior to any mode of planing before known. The number of plank or boards fed into it is the only limit to the amount it will plane. For rights to this machine apply to the patentee at the abovenamed foundry—or at his residence No. 764 Broadway; Albany. GEO. W. BEARDSLEE. 23tf

MACHINERY.—S. C. HILLS, No. 12 Platt-st. N. Y. dealer in Steam Engines, Boilers, Iron Planers, Lathes, Universal Chucks, Drills; Kase's, Von Schmidt's and other Pumps; Johnson's Shingle Machines; Woodworth's, Daniel's and Law's Planing machines; Dick's Presses, Punches and Shears; Morticing and Tennoning machines; Belting; machinery oil, Beal's patent Cob and Corn mills; Burr mill and Grindstones; Lead and Iron Pipe &c. Letters to be noticed must be post-paid. 26 tf

WOOD'S IMPROVED SHINGLE MACHINE—Patented January 8th 1850, is without doubt the most valuable improvement ever made in this branch of labor-saving machinery. It has been thoroughly tested upon all kinds of timber and so great was the favor with which this machine was held at the last Fair of the American Institute that an unbought premium was awarded to it in preference to any other on exhibition. Persons wishing for rights can address (post-paid) JAMES D. JOHNSON, Bridgeport, Ct.; or WM. WOOD, Westport; Ct., All letters will be promptly attended to. 22tf

TO INVENTORS—The subscribers will enter into arrangements, on the most reasonable terms, for furnishing Drawings, Patterns, and Models, believing that they have one of the most thorough and scientific men, in that line of business, to be found in New York. Their object is merely to fill up time, they not having sufficient work of their own to keep him in steady employment, and do not like to have him leave for fear they could not obtain his services when required. Apply at Dunlop's Manufacturing Emporium, No. 36 Gold street.
41 13* FRASER & EVERITT.

PAINTS, &c. &c.—American Atomic Drier Graining Colors, Anti-friction Paste, Gold Size, Zinc Drier, and Stove Polish.
QUARTERMAN & SON, 114 John st.,
23tf Painters and Chemists.

CHARLES F. MANN, FULTON IRON WORKS, Below the Troy and Greenbush Railroad Depot, Troy, N. Y.—The subscriber builds Steam Engines and Boilers of various patterns and sizes, from three horse power upward; also, his Portable Steam Engine and Boiler combined, occupying little space, economical in fuel, safe, and easily managed; Double Action Lift and Force Pumps; Fixtures and Apparatus for Steam or Water; Tools for Machine Shops; Shafting and Pulleys for Factories. Brass Castings and Machinery made to order at short notice. Steam engines furnished cheaper than can be had elsewhere, of the same quality. 30tf

LATHES FOR BROOM HANDLES, Etc.—We continue to sell Alcott's Concentric Lathe, which is adapted to turning Windsor Chair Legs, Pillars, Rods and Rounds; Hoe Handles, Fork Handles and Broom Handles.

This Lathe is capable of turning under two inches diameter, with only the trouble of changing the dies and pattern to the size required. It will turn smooth over swells or depressions of 3-4 to the inch and work as smoothly as on a straight line—and does excellent work. Sold without frames for the low price of $25—boxed and shipped with directions for setting up. Address (post-paid) MUNN & CO.
At this Office.

1852 TO 1856.----WOODWORTH'S PATENT Planing, Tongueing, Grooving, Rabeting, and Moulding Machines.—Ninety-nine hundredths of all the planed lumber used in our large cities and towns continues to be dressed with Woodworth's Patent Machines. Price from $150 to $760. For rights in the unoccupied towns and counties of New York and Northern Pennsylvania, apply to JOHN GIBSON, Planing Mills, Albany, N. Y. 26tf

LEONARD'S MACHINERY DEPOT, 109 Pearl-st. and 60 Beaver, N. Y.—Leather Banding Manufactory, N. Y.—Machinists's Tools, a large assortment from the "Lowell Machine Shop," and other celebrated makers. Also a general supply of mechanics' and manufacturers' articles, and a superior quality of oak-tanned Leather Belting.
45tf P. A. LEONARD.

PATENT CAR AXLE LATHE—I am now manufacturing, and have for sale, the above lathes; weight, 5,500 lbs., price $600. I have also for sale my patent engine screw lathe, for turning and chucking tapers, cutting screws and all kinds of common job work, weight 1500 lbs., price $225. The above lathe warranted to give good satisfaction. J. D. WHITE, Hartford, Ct. 39 26*

A. B. ELY, Counsellor at Law, 46 Washington st., Boston, will give particular attention to Patent Cases. Refers to Munn & Co., Scientific American. 13tf

TRACY & FALES, RAILROAD CAR MANUFACTORY—Grove Works, Hartford, Conn. Passenger, freight, and all other descriptions of railroad cars and locomotive tenders made to order promptly. 26tf

LOGAN VAIL & CO., No. 9 Gold street, New York, agents for George Vail & Co., Speedwell Iron Works, have constantly on hand Saw Mill and Grist Mill Irons, Press Screws, Bogardus' Horse-Powers, and will take orders of Machinery of any kind, of iron and brass; Portable Saw-mills and Steam Engines, Saw Gummers of approved and cheap kind, &c. Gearing, Shafting, large and small, cast or of wrought iron. 11 1y

NEW HAVEN MANUFACTURING COMPANY, Tool Builders, New Haven, Conn., (successors to Scranton & Parshley) have now on hand $25,000 worth of Machinist's Tools, consisting of power planers, to plane from 5 to 12 feet; slide lathes from 6 to 18 feet long; 3 size hand lathes, with or without shears; counter shafts, to fit all sizes and kinds of universal chuck gear cutting engines; drill presses, index plates, bolt cutters, and 3 size slide rests. The Co are also manufacturing steam engines. All of the above tools are of the best quality, and are for sale at 25 per cent. less than any other tools in the market. Cuts and list of prices can be had by addressing as above, post-paid. Warehouse No. 12 Platt st., New York, S. C. HILLS, Agent N. H Man'g Co. 45tf

© 1852 SCIENTIFIC AMERICAN, INC

SCIENTIFIC MUSEUM.

Elementary Mechanics.

Acoustics—The intensity of sound, like that of attraction, diminishes in the inverse ratio of the squares of the distances of the sounding body, when opposing currents of air or other obstacles do not interfere.

According to experiments made by the French Academicians, the velocity of sound at a temperature of 55° Fahr., is ascertained to be 1,044 feet per second; but it has been variously given by different philosophers. According to Flamstead and Halley, it is 1,142; according to recent experiments in Holland, its mean velocity is 1,120 feet per second.

A whisper, so far as it goes, travels as fast as the report of a cannon: it also describes equal spaces in equal times. The strength of sound is greatest in cold and dense air, and least in that which is warm and rarified. During Captain Parry's first voyage, in lat. 74° 30′ N., people might be heard conversing distinctly, in a common tone of voice, at a distance of one mile.

Sound travels through different media with various velocities.—Through air at 1,130 feet per second; water, 4,900; cast-iron, 11,090 steel, 17,000; glass, 18,000; wood, 4,636 to 17,000.

Two sets of sonorous vibrations of equal intensity, and encountering each other in opposite phases of vibrations, will interfere and become mutually checked; and thus silence be produced by the conflict of two sounds. Sonorous vibrations, on impinging on a plain surface, are reflected from it in such a manner that the angles of incidence and reflection are equal.

A perfect echo ensues after the lapse of 0·1 second.

Sound is reflected by curved surfaces in the same manner as light and heat.

Method of Computing Distances by Sound.—Assuming that sound passes through the air, uniformly, at the rate of 1,142 feet in a second, or through a mile in about 4 2-3 seconds; any distance may be readily found, in feet, by multiplying the time, in seconds, which the sound takes to arrive at the ear, by 1,142; or in miles, by multiplying the same by 3·14.

Note—the time taken for the passage of sound, in the interval between seeing a flash of lightning, or that of a gun, and hearing the report, may be observed by a watch or a second's pendulum; or it may be determined by the beats of the pulse, counting, on an average, about 70 to a minute, for persons in moderate health, or 5¼ pulsations for a mile.

Example.—After observing a flash of lightning, it was 12 seconds before I heard the thunder; required the distance of the cloud from which it came—

$$\frac{12\times3}{14}=2\ 4\text{-}7 \text{ miles, Ans.}$$

Light comes from the sun in about 8 minutes; hence light travels at the rate of 200,000 miles per second; or, according to Sir J. Herschel, at the rate of 192,500 miles in a second.

Tartar Emetic.

This is one of most deadly poisons used in medicine. This is admitted by all schools of medicine, and when it is known to all that so many thousands of human beings have been killed from its use, even under the most careful administration and attention, we cannot understand why any man in the profession will continue to use it. It caused the death of one of the most lovely children in this city a short time since. It was given in small doses and continued too long. At last it produced its characteristic effect, and the child died before its parents supposed it to be dangerously ill.

We saw another child a few days since, in a state of perfect insensibility and prostration, from the administration of half a tea-spoonful of Cox's Hive Syrup. This is a very common remedy. It has killed hundreds, and should never be used, for it contains a large quantity of this most deadly poison.

Dr. Boling is now condemning this drug, and the same is endorsed by the editor of the American Journal of Medical Science. We will venture the opinion that tartar emetic will be stricken from the Materia Medica of the Old School, as it always has been of the Eclectic, in less than two years.—[Eclectic Medical (Cin.) Journal.

Patent Double-Acting Doors.

The accompanying engravings are views of an improvement in "Double Acting Doors," invented by William Rippon, of Providence, R. I., and for which a patent was granted on the 6th of last month.

Fig. 1.

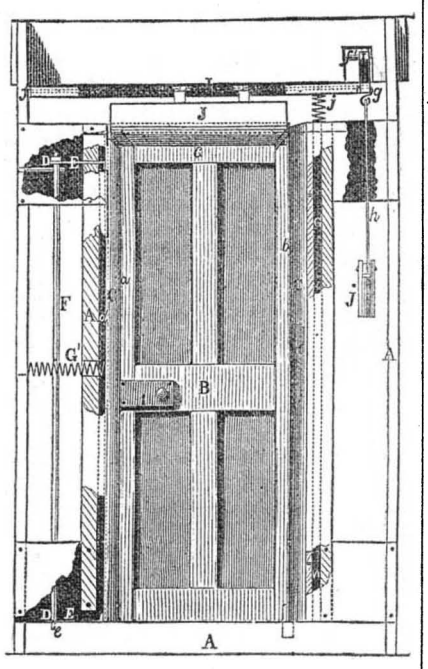
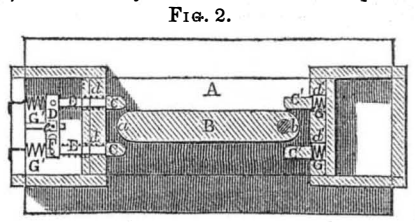


Fig. 1 is a front elevation of a door-frame and door, having some of its parts broken off and sectioned, so as to show how the improvement is attached, and how the door operates when opened, also how the springs act upon the slats after the door has been thrown wide open or closed tight. Fig. 2 is a horizontal section, taken through the top border of the door. The same letters refer to like parts.

A is the frame of the door; B is the door, which may be hung in any suitable way. The front, top, and back edges, *a c b*, of the door, are of a round form, as shown in fig. 2. C C, C′ C′ are vertical adjusting slats, there are four of them, one on each side, front and back edges; these slats work in vertical elongated grooves, *d d*. The front slats (one on each side) are connected to horizontal levers, D D, by means of the links, E E; these levers are connected and sustained by a rod, F, and they turn on fulcrum pins, *e*, one being secured in the top and the other in the bottom of the door frame; G G G′ G′ are spiral springs attached to the slats and to the frame, A. The form of the slats is shown in fig. 2; when the door is shut or opened, in or out, they are moved horizontally back and forth in the grooves, *d*, and thus they allow the door to be opened

Fig. 2.



in either direction. The levers, D, and springs, G are so arranged that, when the door is being opened, the friction of the front edge of the door on the round edges of the slats, has a tendency to operate the levers and contract the springs, and thereby cause the slats to be operated as described; and when the door is being closed, these springs and levers are operated in a similar manner, but after the door has been closed tight, or thrown wide open, these springs allow of the slats assuming their original positions. When the door is closed, it is kept perfectly tight around the edges, therefore the entrance of dust and wind are prevented. These springs and levers keep the door snugly in its proper place, until a sufficient force is applied to it (the door) to contract the springs and operate the levers. There is a vibrating cross-piece, I, at the top; it turns on a rod, *f*, which is secured in the frame. There is a hinged slat, J J, on each side of the top of the door; to these slats the rocking cross-piece, I, is also secured. A chain or cord, *h*, is attached to the end, *g*, of the arm, I′; it has a weight attached to it. When the door is being opened against the top slats, J J, the weight on the chord acts upon the cross-piece, I, and causes it to vibrate. When the door is thrown open, the weight, *j*, and spring, *j*, pull the slats to their proper position over the door, and also allow of their being moved in any way, when operated upon by the door. The claim is for arranging the horizontal slats, J J, and vertical slats, C C′, along the front, back, and top edges of the door, for the purpose of allowing the door to be opened in either direction—in or out—as has been described, viz., by the levers, D, springs, G, and arm, chain, and weight, I′, *h*, *j*. The door is self-acting, both ways, and the slats perform the office of weather strips to keep out dust, wind, &c., from passing through between the top and sides.

More information may be obtained by letter addressed to Mr. Rippon, at Providence.

(For the Scientific American.)

Science and Arts.

One great evidence of progress in our age is the increase of harmony between the man of science and the manufacturer. The wall of separation, so long existent between theory and practice, is being thrown down. Science is becoming the handmaid of the arts. In this information, the Press is the main engine of development—the great element of reconciliation of the world to the fact, that art is applied science.

Experience should never be at war with abstract principles, because she does not foresee their immediate utility, nor should science despise facts. Principles will not acquire correctness and consistency until the artist and man of science mutually inform one another. A liberal and candid communication of individual observation would ultimately tend to the benefit of each manufacturer, by promoting the common interest in the increased improvement and perfection of instruments and methods; for the welfare of a particular art depends more upon the general pre-eminence of a national product, than that of one man's article over another's—which superiority is connected with industry, ingenuity, and intellect in the aggregate. Much mischief arises from fallacious principles being advanced by scientific men because they want that practical knowledge which can be acquired only by long personal acquaintance with processes in the large way. This shackles the manufacturer with prejudice and suspicion, and leads him to exclude science from his shop, and to despise the accurate results of the laboratory as undeserving of experiment on an extended scale. Neither will make advancement with such feelings; they must be united to stand. It is only by numerous experiments and liberal discussions that improvements are to be obtained, and that the value of principles are to be established on the surest foundation. In our investigations we should not be purely scientific nor wholly mechanical. The philosopher's stone will be found only in combining them. To this end there should be a dissemination of the principles and operations which experience has determined to be the best. And here the press comes to our aid. Silliman's Journal, with its satellites, is the organ of science; while several periodicals are devoted wholly to the interests of the mechanic arts. And we imagine that the Scientific American favors the connecting link between the two. The man of science is here brought in close proximity to the manufacturer; the former compelled to acknowledge his need of experience, and the latter to feel his indebtedness to principles. And we believe that the rapid progress of both, in late years, is chiefly owing to this union; it is a triumph over error—a triumph over prejudice, and is destined to prove the harbinger of a glorious era to America. It is her revolution in this respect that has raised her in the scale of nations. And it is the duty of Americans to cherish that union, for it is the palladium of liberty, and the vanguard of civilization.—"Where Science and the Arts are stagnant, purblind Bigotry guards the doors of churches, and jaundiced Superstition sits enshrined within."

J. O. .

We are indebted to the courtesy of Hons. J. H. Boyd, of New York, and D. K. Cartter, of Ohio, for Congressional favors.

LITERARY NOTICES.

Meyer's Universum—Part III., of Vol. 1, is before us. This elegant illustrated serial sustains a high reputation abroad, and is rapidly gaining favor in this country. This number contains an engraving of "Walhalla," in Bavaria; "A Walk in Richmond Park;" "The Temple of the Sun at Balbec," and "Street Scenery in Constantinople." Each engraving is well described. Price 25 cents per number; Herrman J. Meyer, 164 William street, publisher.

National Portrait Gallery of Distinguished Americans—with Biographical Sketches—This is the title of a new publication, truly American in its character, just commenced by R. E. Peterson & Co., Philadelphia. It is to be completed in 40 numbers, each containing three plates; price 25 cents per number. It gives us pleasure to recommend this enterprize to the patronage of our readers: it will not only embrace our Revolutionary Patriots, but many of the most prominent statesmen of our day and generation. The portraits will be finely engraved, and the finest paper employed. The subscription price is $10; sent by mail free of postage Wm. Terry, No. 13 Nassau street, is agent for this city.

Biblical Repertory—Princeton Review—This very able Review, published by Wm. H. Mitchell, Philadelphia, for this Quarter, contains an exceedingly interesting review of the Collections of the New Jersey Historical Society, and the Papers of Governor Morris, of the old Province; also an able review of Humboldt's "Cosmos," one on the origin of language, another on Austria, and the Proceedings of the last General Assembly at Charleston. This Review is Presbyterian, connected with the O. S. It has a high character for learning and ability.

PROSPECTUS

OF VOLUME VIII.,

OF THE

SCIENTIFIC AMERICAN

The Eighth Volume of the SCIENTIFIC AMERICAN commences on the 18th of September, and as a great proportion of our readers usually commence their subscriptions at this point, we take occasion to extend them our gratitude for the encouraging and liberal support heretofore bestowed upon our humble efforts, and to re-assure them of our determination to advance it still higher in the scale of utility, and, if possible, in their own estimation. We aim at an honorable independence in discussion upon all subjects, and, in some instances no doubt, our readers may have been surprised at our determined opposition to highly lauded discoveries in the Arts and Sciences.

Time tries all things, and it is with some degree of pride that we revert to the efforts made through the columns of the Scientific American, to establish sound views respecting several conspicuous miscalled discoveries. Since the commencement of this Volume, that peerless Exhibition of the Industry of all Nations closed its gorgeous display, affording a delightful episode in the stern page of the world's history. Above and beyond all criticism it has passed away, leaving a world-wide influence, beneficial to every branch of industry, and although not profusely represented by gew-gaws and tinselry,—the character of our country shone forth with magnificence in all the elements of substantial utility. Acting under the stimulus suggested by the success of the Great Exhibition, the enterprizing citizens of New York have determined to construct a Crystal Palace of no mean dimensions, and as this is likely to become an important feature in our history, we shall endeavor to present our readers with descriptions and illustrations of such novelties as may be deserving attention.

The present form of the Scientific American will be preserved as most suitable for binding and preservation. The paper will be of the best texture, and we shall aim to store its pages with practical knowledge in every branch of the Arts and Sciences. Invention claims important attention, as one of the fundamental agencies in the world's advancement; hitherto we hope to have satisfied our readers by our weekly summary of "New Inventions." The Weekly List of Patent Claims, officially reported for our columns, is a distinguishing feature, which must commend itself to every one interested in Patents.

We need the co-operation of our readers to enable us to publish a journal, worthy of their support, at two dollars per annum. We have never appealed to them in vain, and the Premiums offered for the largest list of subscribers, will, we presume, encourage new efforts. All subscriptions are payable in advance.

We repeat our warning against Travelling Agents, as none are accredited from this office.

Letters should be directed (post-paid) to

MUNN & CO.,
128 Fulton street, New York.

Terms! Terms! Terms!

One copy, for One Year	$2
" Six Months	$1
Five copies, for Six Months	$4
Ten Copies for Six Months for	$8
Ten Copies for Twelve Months,	$15
Fifteen Copies for Twelve Months,	$22
Twenty Copies for Twelve Months,	$28

Southern and Western Money taken at par for subscriptions, or Post Office Stamps taken at their full value.

☞ PRIZES—For List of Prizes offered for the four largest lists of subscribers, see No. 46, Sci. Am., present volume.

© 1852 SCIENTIFIC AMERICAN, INC